



## **The Nordic Monitoring System 2011-2014. Status and development of diet, physical activity, smoking, alcohol and overweight**

**Matthiessen, Jeppe; Andersen, L. F.; Barbieri, H. E.; Borodulin, K.; Knudsen, Vibeke Kildegaard; Kørup, Karsten; Thorgeirsdottir, H.; Trolle, Ellen; Fagt, Sisse**

*Link to article, DOI:*  
[10.6027/ TN2016-561](https://doi.org/10.6027/TN2016-561)

*Publication date:*  
2016

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Matthiessen, J., Andersen, L. F., Barbieri, H. E., Borodulin, K., Knudsen, V. K., Kørup, K., Thorgeirsdottir, H., Trolle, E., & Fagt, S. (2016). *The Nordic Monitoring System 2011-2014. Status and development of diet, physical activity, smoking, alcohol and overweight*. Nordic Council of Ministers. TemaNord No. 561  
[https://doi.org/10.6027/ TN2016-561](https://doi.org/10.6027/TN2016-561)

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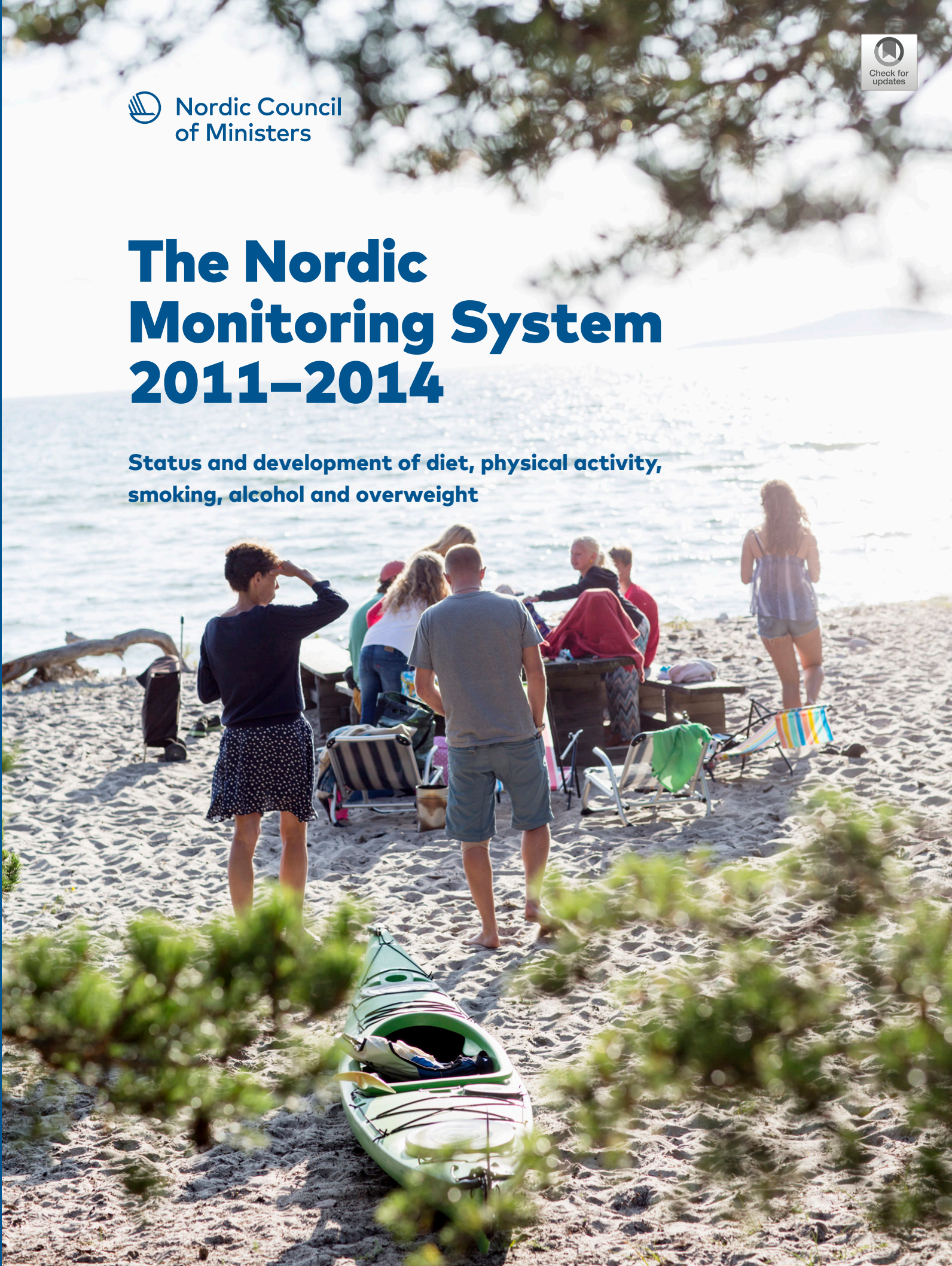


Nordic Council  
of Ministers



# The Nordic Monitoring System 2011–2014

Status and development of diet, physical activity,  
smoking, alcohol and overweight







# **The Nordic Monitoring System**

## **2011–2014**

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*Matthiessen J, Andersen LF, Barbieri HE, Borodulin K, Knudsen VK, Kørup K, Thorgeirsdottir H, Trolle E and Fagt S*

TemaNord 2016:561



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ISBN 978-92-893-4797-6 (PRINT)

ISBN 978-92-893-4798-3 (PDF)

ISBN 978-92-893-4799-0 (EPUB)

<http://dx.doi.org/10.6027/TN2016-561>

TemaNord 2016:561

ISSN 0908-6692

Standard: PDF/UA-1

ISO 14289-1

© Nordic Council of Ministers 2017

Layout: NMR

Cover photo: Johnér

Print: Rosendahls-Schultz Grafisk

Copies 130

Printed in Denmark



Although the Nordic Council of Ministers funded this publication, the contents do not necessarily reflect its views, policies or recommendations.

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*Nordic co-operation* seeks to safeguard Nordic and regional interests and principles in the global community. Shared Nordic values help the region solidify its position as one of the world's most innovative and competitive.

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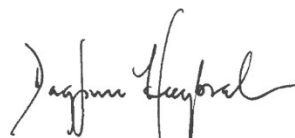
# Preface

The governments in the Nordic countries have through the Nordic Plan of Action on better health committed themselves nationally to address the issue of unhealthy diet, physical inactivity and overweight and enacted policies to promote a healthier lifestyle. The Nordic Council of Ministers has underlined these commitments by formulating common Nordic ambitions in form of Goals 2011 and Visions 2021 on combating unhealthy diet, physical inactivity, and overweight by drawing up the joint Nordic Plan of Action in 2006.

Common goals have been formulated to allow for comparisons, whereby national actions taken in each of the Nordic countries can be assessed. A common ambition is a clear benefit for the Nordic countries when coupled with a common monitoring of effects, an increased sharing of knowledge, a common effort to identify best practice, and increased scientific cooperation. In 2007, a Nordic working group was established with the aim to describe a future Nordic Monitoring System on diet, physical activity and overweight.

In 2008–2010, the monitoring system was developed and validated. In 2011, the first collections of data in the Nordic countries took place and results from this were published in 2012. In 2014, the second data collection was conducted and the current report presents the results from the two data collections.

Valuable contributions have been made by the following: Associate professor Anders Stockmarr, DTU Compute, Denmark, who calculated the population weights and counseled on the statistical analyses. Behavioral scientist Sveinbjörn Kristjánsson, Determinants of Health and Wellbeing, Directorate of Health, Iceland, has contributed to the chapter on smoking.



*Dagfinn Höybråten*

Secretary General  
Nordic Council of Ministers



# Summary

## Background and objective

Monitoring of diet, physical activity and overweight in the Nordic region is an important element in the Nordic Plan of Action for better health as was put forward by the Nordic Council of Ministers. This report describes the second data collection in 2014 and presents status and the development from 2011 to 2014 as compared to the Goals 2011 and Visions 2021 set by the Nordic Plan of Action.

The objective of the Nordic Monitoring System on diet, physical activity and overweight is to provide status and temporal trend data of diet, physical activity and overweight among adults and children in the Nordic region. Furthermore, objectives are to compare results between the Nordic countries and to compare with regard to recommendations on diet and physical activity, and to examine social inequality in diet, physical activity and overweight. Finally the results are evaluated against the goals and visions in the Nordic Plan of Action to indicate whether diet, physical activity and overweight change favorably or not.

From 2014 the consumption of alcohol as well as smoking behaviour among adults has been included in the data collection, thus enabling comparison of these indicators within the Nordic region.

## Method

Data on diet, physical activity and overweight have been collected in the autumn 2011 and 2014 among 17.775 adults aged 18–65 years and 4.949 children aged 7–12 years in Denmark, Finland, Sweden, Iceland and Norway. A simple random sample of adults and children was drawn from a national register in each of the five Nordic countries. Data were collected by telephone interviews based on a simple questionnaire with validated indicator questions about dietary intake, physical activity and sedentary behaviour. In addition, data on alcohol consumption (adults), smoking behaviour (adults), self-reported body weight and height and a few sociodemographic questions were collected.

The obtained data were checked by the Danish partners at the National Food Institute in Denmark. The further data processing, including cleaning and quality assurance



and weighting of data according to gender, age and education level in each of the five Nordic countries, were conducted by the Danish partner that also carried out the statistical analyses. The use of weighted data introduces minor changes regarding data from 2011 compared to previous published results.

In 2014, the number of adult respondents in total was 8,622. The pooled participation rate among adults in the Nordic countries was 32%. The number of respondents among children was in total 2,479. The pooled participation rate among children in the Nordic countries was 45%. Among adults the participation rate was lower in 2014 than in 2011 (40% vs. 32%), while no change was found between survey years among children (45% vs. 45%).

## Results

The results are presented in five chapters on diet, physical activity and sedentary behaviour, overweight and obesity, alcohol, and smoking, respectively. The subsequent chapter includes an overview and discussion of the results.

The emphasis in presenting the results in the report has been put on the key findings in the Nordic region. Results are also presented according to gender, age and education. Status and the development of selected key variables of poor health behaviour and health status are shown in the present report, i.e. unhealthy diet, inactive, high recreational screen time, overweight or obesity (OW/OB), obesity (OB), smokers (adults in 2014), daily smokers (adults in 2014), mean total alcohol consumption (adults in 2014) and binge drinking last month (adults in 2014). The key variables have been chosen to evaluate Goals 2011 and Visions 2021 in the Nordic Plan of Action on better health and quality of life through diet and physical activity. The key variables were also used to assess and identify the group of individuals in the Nordic region that would most likely achieve the greatest health benefits by getting a healthier lifestyle and weight status. Identifying the groups which would benefit the most from a healthier lifestyle and weight status was done because the governments in the Nordic countries have committed themselves nationally to address the issue of unhealthy diet, physical inactivity and overweight to promote a healthier lifestyle in the Nordic region.

Selected data on country level are presented, in terms of which country has the least/most favorable position with a healthy/unhealthy behaviour and weight status. Finally, the results are evaluated in relation to the Goals 2011 and Visions 2021 in the Nordic Plan of Action.

## Status and development in the Nordic region: 2011–2014

The main results show that the proportion of adults in the Nordic region with an unhealthy diet was more than 20% and increased from 2011 to 2014, while the proportion with a healthy diet decreased and only was 10% in 2014. The category unhealthy/healthy diet is measured by a dietary quality score including intake of fruits and vegetables, fish, whole grain bread, and foods rich in saturated fat or added sugar. Only with regard to added sugar there was a favorable development among adults in the Nordic region. This favorable development was also seen in Denmark, Finland and Norway while no change was seen in Sweden and Iceland. The other dietary variables showed an unfavorable development among adults, except for the intake of fruits and vegetables that did not change in the Nordic region, but increased in Finland and Sweden. No change in fruit and vegetables was observed in Denmark and Iceland and a decrease was seen in Norway.

One in three adults were physically inactive and three in ten spent more than four hours daily on recreational screen time in the Nordic region. In addition, the prevalence of OW/OB and OB among adults was high. Today, it is almost as common to be overweight or obese as an adult in the Nordic region as being normal weight. Furthermore, the increase in the OB prevalence and in the proportions with an unhealthy diet, of highly inactive and with high recreational screen time among adults is of concern. Even so, an encouraging increase in the proportion of highly active was also found. These findings could indicate that an increased polarisation of the physical activity pattern is evident among adults in the Nordic region.

The development of alcohol consumption and smoking behaviour has not been previously reported in the Nordic Monitoring System since these variables were not included until the data collection in 2014. Mean total alcohol consumption was 1.7 times/week and the proportion of binge drinkers was 45% in 2014 among adults in the Nordic region. The proportion of smokers was 21% and the proportion of daily smokers was 14% in the Nordic region.

Results show that health behaviour and weight status, i.e. diet, sedentary behaviour, smoking, alcohol, overweight and obesity were less favorable among men than among women in the Nordic region.

Among children in the Nordic region, there were no changes in the overall diet, physical activity and overweight between 2011 and 2014. As for adults there was a favorable development in the Nordic region with regard to added sugar although there was no change in each of the five Nordic countries. Furthermore, the intake of fruits and vegetables and fish increased in the Nordic region.

Although it is encouraging that the same unfavorable development from 2011 to 2014 is not seen among children as for the adults, the high population levels of unhealthy diet, inactivity and overweight in 2014 are of concern. Even though the proportion among children with an unhealthy diet was 15%, the proportion with a healthy diet was only 10%. The proportion of inactive children is approx. 60% and therefore high. Also the prevalence of OW/OB and OB was relative high (15%); and a halt in development has previously been followed by a rise.

Gender differences in health behaviour and weight status are not as clear in children as in adults in the Nordic region. The overall diet and sedentary behaviour were less favorable among boys than among girls, whereas physical activity was less favorable among girls.

## Public health challenges in the Nordic countries

Each of the five Nordic countries is challenged with some specific unfavorable population levels and/or development in health behaviour and/or weight status among adults and/or children compared to the other Nordic countries. Denmark is challenged with unfavorable smoking and alcohol behaviour among adults. Sedentary behaviour may be an increasing public health challenge among adults in Finland taking the most recent development of high recreational screen time into consideration. The population level and the development of the proportion with an unhealthy diet in Sweden are of concern, especially among adults. In addition, the high proportion of inactive children in Sweden is worrying from a public health point perspective even if the level did not change between 2011 and 2014. The current situation and the development of OW/OB and OB indicate that this is a major public health problem among adults in Iceland. Finally, the high proportion of inactive among adults in Norway may give rise to concern even if no change was detected between 2011 and 2014.

Results show that there is still a need for improvements in all the Nordic countries in some areas. The development among adults has mostly been unfavorable or unchanged in the Nordic countries, while the development has mostly been unchanged or favorable among children.



## Evaluation of Goals 2011 and Visions 2021 for diet, physical activity and overweight

The evaluation of the main results in relation to Goals 2011 and Visions 2021 in the Nordic Plan of Action reflects the overall development in the Nordic region. The goals aim at a favorable development of diet, physical activity and overweight, while the visions aim at reaching a certain population level in 2021.

The goal of added sugar in the diet, "The intake of added sugar has been reduced", has been fulfilled among adults and children in the Nordic region.

In children, four other goals that have been successfully fulfilled are: "The consumption of fruits and vegetables has increased", "The consumption of fish has increased", "The current trend, where an increasing proportion of children are physically inactive, has been brought to a halt and at best reversed", and "The continuing increase in the proportion of the overweight and obese children has been stopped and at best reversed".

In addition, the goals with regard to social inequality in diet, physical activity and OW/OB also seem to be fulfilled since a decrease or no change in social inequality in diet, physical activity and overweight was found in both adults and children, except for the children regarding diet. However, the way goals on social inequality have been fulfilled was not always beneficial from a public health perspective because health behaviour and weight status has deteriorated in the high educated group.

The only vision that is currently fulfilled is the one regarding whole grain bread intake in both adults and children in the Nordic region. However, this vision needs a critical revision since the variable shows quite high values even though the intake of whole grain bread is low and decreasing, and depending on the intake of white bread.

## Conclusion

The Nordic Monitoring System has collected data in 2011 and 2014. In this short three year period, significant changes have occurred in the Nordic region, albeit some are modest in magnitude. Some of the changes in the Nordic Monitoring System may be due to natural variation influenced by different factors such as low participation rate. Thus, based on two data collections, three years apart, it is too early to make too firm interpretations of the development in the Nordic region. The Nordic monitoring has to be repeated before temporal trends may be interpreted more distinctly.

The strength of the Nordic Monitoring System is the high comparability between survey years, age groups, educational levels and countries. Other national surveys cannot

provide such comparability. However before a third data collection is started, initiatives to improve response rate especially in some of the Nordic countries are needed. Furthermore, there is a need for a critical revision of some of the variables used in the evaluation of the goals and visions in the Nordic Plan of Action.

Some of the visions may be possible to fulfill in 2021 among adults in the Nordic region such as the visions on the intake of added sugar, the target population level of physical activity and social inequality in physical activity and overweight, while other visions such as the intake of fruits and vegetables, fish, and saturated fat, the target population level of OW/OB and OB and social inequality in diet will be difficult to reach in 2021.

Among children in the Nordic region the only vision that may be possible to fulfill is the target prevalence of OB, while the visions on added sugar, target population level of physical activity in addition to other visions such as the intake of fruits and vegetables, fish, and saturated fat, and the target population level of OW/OB and social inequality in diet will be difficult to reach in 2021.

In conclusion, the big picture of the changes from 2011 to 2014 in diet, physical activity, and overweight shows that the development is heading in the wrong direction among adults in the Nordic region while the development among children is more encouraging, but improvements are still needed. A future third data collection may show if these tendencies will continue or if public health initiatives that target diet, physical activity and overweight among adults and children in the Nordic region will succeed in introducing improvements that lead to healthier behaviour and weight status. Men, 45–65-y-olds and the low educated may be especially relevant groups to target to fulfill the common Nordic ambition of ensuring better health and quality of life on equal terms for all Nordic citizens.

# 1. Background

Monitoring of diet, physical activity and overweight in the Nordic region is an important element in the Nordic Plan of Action on better health as was put forward by the Nordic Council of Ministers in 2006. The monitoring project was started in 2008 and a joint validated Nordic method for collecting representative data on diet, physical activity and overweight was developed (Fagt *et al.* 2009 and 2012). In 2011, the first collection of data in all the Nordic countries took place (Rasmussen *et al.* 2012). This report describes the second data collection in 2014 and presents the development from 2011 to 2014 as compared to the goals and visions set by the Nordic Plan of Action.

The method used for the monitoring is a telephone interview based on a questionnaire containing 15 indicators of diet and six indicators of physical activity and sedentary behaviour as well as self-reported body weight and height and sociodemographic variables of participants. The dietary indicators reflect the nutritional quality of the diet and cover foods included in food based dietary guidelines and related to prevalence of non-communicable diseases. The indicators of physical activity and sedentary behaviour are chosen as these reflect different health aspects related to an active/inactive lifestyle and cover physical activity included in the physical activity recommendations. In addition, BMI calculated from self-reported body weight and height was used as an indicator of body fat to estimate overweight and obesity among adults and children. The indicators are suitable for evaluating the development of diet, physical activity and overweight and whether the goals and visions of the Nordic Plan of Action are met.

In 2014, data on smoking and alcohol intake has also been included in the questionnaire.





## 2. Objective

The objective of the Nordic monitoring of diet, physical activity and overweight is to provide data on status and changes in the intake of selected foods, physical activity, sedentary behaviour and the prevalence of overweight and obesity in the Nordic countries. Furthermore, the objective is to compare results between countries and to compare intake of certain foods and physical activity with regard to the recommendations on diet and physical activity. A further objective is to examine social inequality in diet, physical activity and overweight. The Nordic Monitoring System of diet, physical activity and overweight makes it possible to examine whether goals and visions in the Nordic Plan of Action on better health are fulfilled and whether diet, physical activity and overweight change in a favorable direction or not in the Nordic region.

Data on diet, physical activity and overweight has been collected in 2011 and 2014 among 17,775 adults (18–65 y) and 4,958 children (7–12 y) in Denmark, Finland, Sweden, Iceland and Norway. From 2014 smoking behaviour as well as the consumption of alcohol among adults has been included in the data collection, thus enabling comparison of these indicators within the Nordic region.

The main emphasis in the present report is on the population levels and the development from 2011 to 2014 of selected key variables (unhealthy diet, inactive, high recreational screen time, overweight and obesity (OW/OB), obesity (OB), smokers (adults in 2014), daily smokers (adults in 2014), mean total alcohol consumption (adults in 2014), binge drinking last month (adults in 2014)). The key variables have been chosen to evaluate goals and visions in the Nordic Plan of Action on better health and quality of life through diet and physical activity. The key findings and the drawn conclusions are based on data of the Nordic region because goals and visions in the Nordic Plan of Action relates to the whole region. In addition, the key variables were also used to assess and identify the group of individuals in the Nordic region and in each of the five Nordic countries that would most likely achieve the greatest health benefits by getting a healthier lifestyle and weight status. Identifying the groups which would benefit the most from a healthier lifestyle and weight status was done because the governments in the Nordic countries have committed themselves nationally to address the issue of unhealthy diet, physical inactivity and overweight to promote a healthier lifestyle in the Nordic region.



### 3. Methods

Telephone interviews were performed in the five Nordic countries with a validated questionnaire (Fagt *et al.* 2012). A simple questionnaire with indicator questions on diet, physical activity, smoking, alcohol, body weight and height, and a few sociodemographic questions were used in the Nordic monitoring. It took approximately 15 minutes to perform the telephone interview. The questionnaire contained the same number of questions in all the Nordic countries, except for the questions regarding bread intake which were different in Sweden and Iceland due to other bread habits. Questions on consumption of alcoholic beverages as well as smoking behaviour have been added in the 2014 data collection. Questions on smokeless tobacco (snuff) were not included in Denmark because use of smokeless tobacco has not been very prevalent in Denmark so far.

In each Nordic country a simple random sample of adults and children was drawn from the national register. In Denmark the sample was drawn by Statistics Denmark from the "Central Population Register". In Finland by "Väestörekisterikeskus" (folkeregistercentralen), in Sweden by "Folkbokföringsregistret", in Iceland by "Þjóðskrá" (Registers Iceland) and in Norway the sample was drawn by "Skatteetaten".

A sample of adults aged 18–65 years and children aged 7–12 years in September/October 2014 was drawn in each of the five Nordic countries (Table 1).

**Table 1: Sample size**

Country	Adults (n)	Children (n)
Denmark	3,935	835
Finland	5,000	1,250
Sweden	7,000	1,250
Iceland	3,712	906
Norway	7,626	1,250

The goal was to carry out at least 2,000 interviews on adults and 500 interviews on children (one of the parents were interviewed) in each of the five Nordic countries. Respondents received an information letter one week before the telephone interview. If no contact was obtained, contact was tried up to eight times on different weekdays and times of the day. If no contact was achieved after eight attempts, this was recorded as

“no contact”. Reason not to participate was recorded and gender, age, and postal code of non-responders were registered.

Telephone interviews were carried out in autumn/winther 2014 (September to December) in all Nordic countries. However, the sample was not received at the planned time in all countries. Therefore, the telephone interviews did not start at the same date (Table 2). The first interviews were carried out September 3<sup>rd</sup> 2014 and the last interviews were finished December 5<sup>th</sup> 2014.

**Table 2: First and last interview date among adults (18–65 y) and parents of children (7–12 y). NORMO 2014**

Country	Adults		Children	
	First interview	Last interview	First interview	Last interview
Norway	5/11	5/12	5/11	5/12
Sverige	22/9	4/11	22/9	4/11
Iceland	26/9	17/11	3/11	19/11
Finland	17/10	29/11	17/10	29/11
Denmark	3/9	16/11	20/9	12/11

SFI, The Danish National Centre for Social Research coordinated the data collection in all the Nordic countries. In Denmark, data were collected by SFI–Survey. Norstat collected data from Sweden, Finland and Norway, while Maskina collected data in Iceland.

### 3.1 Questionnaire

The English versions of the questionnaires for adults and children are shown in Appendix A. The questionnaires have been translated into the five Nordic languages and are close to be identical. The food frequency questionnaire used for adults and children included questions on the intake of various types of bread, vegetables, fruits and berries, fish, sausages, candy and chocolate, cakes and biscuits, full fat cheese, fruit juice, sugar-sweetened and sugar-free soft drinks and energy drinks. Furthermore, questions regarding type of fat used for spread and cooking were included. Questions on physical activity during leisure-time included questions on time spent on moderate and vigorous physical activity during the last week as well as daily time spent on sedentary recreational screen time (TV and computer) during the last week. In addition, questions on occupational (adults) and leisure-time physical activity level were part of the physical activity questionnaire. Sociodemographic questions on gender, age, education (parental education for children), urbanization and household composition were also included. Finally, questions on body weight and height were part of the questionnaire. In

2014, the questionnaire also included questions on consumption of alcoholic beverages and smoking behaviour.

## 3.2 Data processing and measures

Data for 2011 and 2014 were handled and processed in the same way. Data were cleaned for coding errors and answers judged unrealistic before analyses. Guidelines for processing and categorizing dietary and physical activity data are shown in appendix B. To account for non-representativeness, data were weighted according to gender, age and education using census data. The use of weighted data introduces a minor change regarding data from 2011 compared to previous published results (Rasmussen *et al.* 2012).

### 3.2.1 Measures

Selected indicators for diet, physical activity and overweight mentioned in the Nordic Plan of Action on better health (Nordic Council of Ministers, 2006) are presented below. These indicators were chosen to evaluate if Goals 2011 and Visions 2021 in the Nordic Plan of Action have been fulfilled. The ambitions with the plan are to promote a healthier lifestyle in the Nordic countries through diet and physical activity. Appendix C shows Goals 2011 and Visions 2021 and how they are evaluated.

### 3.2.2 Sociodemographic data

Gender, age and education (parental education in children) were used as key background variables. Adults were categorized into three age groups: 18–24-, 25–44- and 45–64-y-olds, while children were analysed as one group (7–12-y-olds). Education was categorized into three groups as well: Low (basic education), medium (vocational education or upper secondary education) and high (short, medium or long higher education). Usually the educational level of the mothers was analysed in children (87.8% of all children in 2014).

In addition, data for key variables (unhealthy diet, inactive, high recreational screen time, overweight or obesity (OW/OB), obesity (OB), smokers (adults), daily smokers (adults), mean total alcohol consumption (adults), binge drinking last month (adults)) are also shown for urbanisation and household composition in appendix D, but data were not analysed statistically. Urbanisation was categorized into five groups: the Capital and suburb, city > 50,000 inhabitants, city 20,000–49,999 inhabitants, town 1,000–

19,999 inhabitants and countryside. Household composition was categorized into three groups: Single, adult(s) living with child(ren), adult(s) living with other adult(s).

### 3.2.3 Diet

A dietary index score was calculated and used to report the overall dietary quality. In Table 3 it is shown how to calculate the diet quality scores (0–2 points according to intake frequency of different foods). The diet quality score has values from 0–12 points and scores between 1–4 indicates an unhealthy diet, scores between 5–8 indicates a medium healthy diet whereas scores 9–12 indicate a healthy diet, and only 12 indicate an optimal diet.

**Table 3: Categorisation of answers from the diet questionnaire (FFQ) among adults and children**

	Unit	0 p	1 p	2 p
Fruits and vegetables	Times per day	< 3	3–4	≥ 5
Bread (wholemeal, rye, hard)	Slices per day	< 1	1–2	≥ 3
Fish and seafood	Times per week	< 1	1–2	≥ 2
Candy, cakes, soft drinks, pommes frites	Times per week	≥ 7	3–6	< 3
Fat on bread	Type	≥ 60% fat	≤ 40% or no spread	–
Cheese	Times per week	≥ 4	1–3	≤ 1
Sausages	Times per week	> 1	≤ 1	–

Intake of fruits and vegetables, fish and whole grain bread were analysed. Moreover, the proportion meeting dietary guidelines for fruit and vegetables, fish and whole grain bread and the proportions with a high consumption of sugar-rich foods, a high consumption of foods rich in saturated fat and with an unhealthy diet (lowest diet quality score) were analysed in adults and children.

The proportion with a high consumption of sugar-rich foods was calculated on basis of the total weekly frequency intake of candy, chocolate, cakes and soft drinks. The proportion with a high consumption of foods rich in saturated fats were calculated on basis of frequency intake of full fat cheese and type of fat used on bread and for cooking. Table 4 shows how the scores are calculated. The sugar index score has values from 0–2 points and a score of 0 indicates a high frequency consumption of sugar-rich foods, a score of 1 indicates a medium frequency consumption of sugar-rich foods whereas a score of 2 indicates a low frequency consumption of sugar-rich foods.

The saturated fat score has similar values from 0–2 points and a score of 0 indicates a high consumption of foods rich in saturated fats whereas a score of 1 indicates a medium consumption of foods rich in saturated fats and a score of 2 indicates a low consumption.



The dietary quality score is based on a dietary index developed in Sweden (Becker 2009) and has previously been used when reporting dietary data in NORMO (Rasmussen *et al.* 2012).

**Table 4: Categorisation of answers in order to calculate the consumption of sugar-rich foods and foods rich in saturated fats among adults and children**

	Unit	0 p	1 p	2 p
Sugar index score:				
Total sum of intake of cakes, candy/chocolate and soft drinks (sugar sweetened)	Times per week	≥ 7	3–6	< 3
Saturated fat score:				
Intake of full fat cheese	Times per week	≥ 4	1–3	< 1
Type of fat used on bread: Margarine (< 40% fat), margarine (< 40% fat) with added phytosterols, do not use fat on bread	Use	No	Yes	
Type of fat used for cooking: Oils, fluid margarine, margarine (<40%fat) with added phytosterols, do not use fat for cooking	Use	No	Yes	

### 3.2.4 Physical activity and Sedentary behaviour

Time spent on moderate and vigorous intensity physical activity (MVPA) and screen time (TV+computer time) during leisure-time was assessed in adults and children. Furthermore, vigorous intensity physical activity (VPA) and moderate intensity physical activity (MPA) was calculated in adults. MPA was calculated among adults by subtracting VPA from MVPA.

Classifications of physical activity are shown in Table 5 and have previously been used when reporting physical activity data in NORMO (Fagt *et al.* 2011, Rasmussen *et al.* 2012). Physically inactive is insufficiently active and is defined as a failure to meet the physical activity recommendations while the complementary proportion, i.e. 100% minus inactive, is defined as physically active and is the proportion who meet the physical activity recommendations. The definition of physical inactivity is in agreement with the definition in the Nordic Nutrition Recommendations 2012 (NNR 2012). High recreational screen time (> 4 hours/day) was used as an indicator of sedentary behavior during leisure-time (see Chapter on Physical activity and sedentary behaviour). The proportions of highly inactive, inactive, active, highly active (adults) and with high recreational screen time were analysed in adults and children. For reason of comparison with previously reported NORMO data (Rasmussen *et al.* 2012) and to evaluate Vision 2021

on physical activity, the proportions of highly inactive, inactive, active and highly active were analysed in the same way even if physical activity recommendations have changed among adults (NNR 2004).

**Table 5: Classifications of physical activity among adults and children**

Activity level	Definitions
Highly inactive (adults, children) – subgroup of inactive	Not meeting physical activity recommendations (almost no MVPA) – classified as an inadequate activity level
Inactive (adults, children)	Not meeting physical activity recommendations (insufficient MVPA) – classified as an inadequate activity level
Active (adults, children)	Meeting minimum physical activity recommendations (meeting MVPA recommendations (children), MPA or VPA recommendations or meeting the recommendation by a combination of MPA and VPA (adults)) – classified as an adequate activity level
Highly active (adults) – subgroup of active	Meeting full physical activity recommendations (meeting MPA and VPA recommendations) – classified as an optimal activity level

### 3.2.5 Smoking and alcohol

Smoking and alcohol were assessed for the first time in NORMO 2014. Therefore it is only possible to examine the population levels of smoking behaviour and alcohol consumption. The proportions of smokers (daily or occasionally smokers) and daily smokers, mean total alcohol consumption and the proportion of binge drinkers during the last month were analysed among adults. The total alcohol consumption is the sum of intake of beer, wine and spirit calculated as times per week. Proportion of binge drinkers was defined as adults drinking  $\geq 5$  units of alcohol at one drinking occasion at least once during the last month.

### 3.2.6 Overweight and obesity

BMI was used as an indicator of body fat to estimate overweight and obesity among adults and children and calculated from self-reported (parent-reported in children) body weight and height. BMI was calculated by dividing body weight in kilograms by the square of height in metres ( $\text{kg/m}^2$ ). Adults were classified as overweight or obese if  $\text{BMI} \geq 25$  and as obese if  $\text{BMI} \geq 30$  (WHO, 2000). Children were classified as overweight or obese according to the International Obesity Task Force age- and gender-specific BMI cut-off points corresponding to BMI values of 25 and 30  $\text{kg/m}^2$ , respectively, for adults (Cole *et al.* 2000).

### 3.2.7 Social inequality in overweight and in health behaviour

Education (parental education in children) was used as an indicator of socioeconomic position. To estimate the magnitude of the social difference in overweight or obesity and in health behaviour (diet, physical activity, sedentary behaviour, smoking and alcohol) in the Nordic countries, the relative difference between the highest (high) and the lowest (low) education group was calculated as suggested by Giske *et al.* (2009). Relative differences were considered small if they were  $\leq 10\%$ , moderate if they were between 10% and 20% and large if they were  $\geq 20\%$ . A negative social difference is caused by a higher value in the low education group than in the high education group and vice versa.

### 3.2.8 Statistics

Data were analysed for adults and children separately and for each gender and Nordic country (Denmark, Finland, Sweden, Iceland, Norway) and for the Nordic region (Denmark + Finland + Sweden + Iceland + Norway).

Means and 95% confidence intervals (CI) were presented for continuous data,<sup>1</sup> while proportions and 95% CI were presented for categorical data. Significance testing was performed using t-tests and Chi-square tests to examine differences between survey years, gender, age groups (adults), education groups, and countries.

No significance testing was performed to examine differences between survey years 2011 and 2014 for the social difference in diet, physical activity, and overweight. A relative difference between survey years below 5 percentage points was considered as no change.

To account for non-representativeness, data were weighted using census data from each of the national statistical bureaus in the five Nordic countries (Statistics Denmark, Statistics Finland, Statistics Sweden, Statistics Iceland, Statistics Norway). This was done to reflect the general population of adults and children for each of the Nordic countries with regard to gender, age and education (parental education for children). To make ed-

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<sup>1</sup> A slight overlap in the confidence intervals was noticed for some of the significant different categorical estimates. Confidence intervals were based on the standard formulas of 1.96 times the standard deviation of data which is a generally accepted measure of uncertainty, but somewhat different from those derived from the true (binomial) distribution of data. The Chi-square test uses the exact distribution and therefore detects the significance. If exact confidence intervals had been used, no overlap between the confidence intervals had occurred. Slightly overlapping confidence intervals were also noticed for some of the significant different continuous estimates. This was due to differences in variation within the analysed groups, and is in line with standard statistical inference theory.

educational data comparable between the Nordic countries International Standard Classification of Education (ISCED) was used.<sup>2</sup> The use of weighted data introduces minor changes regarding data from 2011 compared to previous published results (Rasmussen *et al.* 2012).

The term “Nordic region” was used when reporting results among adults and children in all the Nordic countries. The Nordic region was analysed using weighted averages according to the population size in the five Nordic countries in 18–65- and 7–12-y-olds. Sweden counts around 36% as the largest Nordic country, Iceland about 1% as the smallest country while Norway, Finland and Denmark counts around 20% of the total Nordic population in 2011 and 2014. Population data from Eurostat were obtained to estimate the population size in the five Nordic countries.

All reported data were weighted. Differences presented in the text are statistically significant ( $p < 0.05$ ) unless otherwise stated. Differences are tabulated as tendencies when  $p < 0.10$ . However, these are not commented in the text. Statistical analyses were carried out by use of SAS Enterprise Guide version 6.1, SAS Institute Inc., Cary, NC, USA and WPS Workbench version 3.0.1.0.23496.

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<sup>2</sup> International Standard Classification of Education, ISCED 2011. UNESCO Institute for Statistics, Montreal Canada 2012. ISCED 1997 classification was used for Iceland.

## 4. Participation

In this chapter results regarding participation rate in the five Nordic countries are reported.

### 4.1 Key findings

- In 2014, the pooled participation rate among adults was 31.7% in the Nordic countries, varying from 54.4% in Iceland to 14.0% in Norway.
- In 2014, the pooled participation rate among children was 45.2% in the Nordic countries, varying from 71.7% in Denmark to 29.1% in Norway.
- A decrease in the participation rate was found from 2011 to 2014 among adults while it was unchanged among children.
- The participants were more often older, women, and had higher level of education than the general population in 2011 and 2014.

### 4.2 Results

#### 4.2.1 Adults 2014

The number of invited adults, the number of participants and the participation rate are shown in Table 6. The pooled participation rate in the Nordic countries was 31.7%. The participation rate differed significantly between the countries with Iceland having the highest participation rate (54.4%) and Norway the lowest rate (14.0%).

**Table 6: Number of invited adults, eligible sample, number of participants and participation rate in 2014. NORMO 2014**

Country	Invited (n)	Eligible sample	Respondents (n)	Participation rate (%)
Denmark	3,929	3,884	2,005	51.7
Finland	5,000	4,996	1,719	34.4
Sweden	7,000	6,997	1,818	26.0
Iceland	3,710	3,696	2,012	54.4
Norway	7,626	7,618	1,068	14.0
All	27,264	27,191	8,622	31.7

There were different reasons for non-participation such as not longer eligible, refusal, not reached, or not eligible phone number (Table 7). Iceland had a low number of persons who refused to participate. Finland, Sweden and Norway had a high number of invited persons who could not be contacted. Norway had as well a high number of invited persons who could not be contacted due to telephone number not working.

**Table 7: Sample and reasons for non participation in Adults (n). NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway
Sample drawn	3,929	5,000	7,000	3,710	7,626
Not eligible (moved, cannot be found, moved abroad), dead	42	4	3	14	8
<i>Eligible sample</i>	<i>3,884</i>	<i>4,996</i>	<i>6,997</i>	<i>3,696</i>	<i>7,618</i>
<i>Interview accomplished</i>	<i>2,008</i>	<i>1,719</i>	<i>1,818</i>	<i>2,012</i>	<i>1,068</i>
of these partly accomplished#	1	2	17	–	11
Reasons for non participation					
Did not want	820	1,207	1,850	423	2,452
No contact	720	1,776	2,763	1,037	2,684
Telephone number not working	172	53	310	90	974
Sickness, away in interview period, in hospital, language problems, other reasons	167	241	256	134	440
Total non participation	1,879	3,277	5,179	1,684	6,550

Note: #All interviews included.

Comparison of participation rates between NORMO 2011 and 2014 shows a decrease in the participation rate in all the Nordic countries, except in Iceland (Table 8). The pooled participation rate in the Nordic countries decreased eight percentage points between 2011 and 2014.

**Table 8: Participation rate *among adults* (%). NORMO 2011 and 2014**

Country	Participation rate 2011* (%)	Participation rate 2014 (%)	Difference (percentagepoints)
Denmark	62.6	51.7	-10.9
Finland	40.0	34.4	-5.6
Sweden	37.7	26.0	-11.7
Iceland	47.3	54.4	7.1
Norway	21.3	14.0	-7.3
All	40.2	31.7	-8.5

Note: \*Participation rate in 2011 is calculated slightly differently than in 2014, but this did not impact results significantly.

#### 4.2.2 *Children 2014*

The number of invited children, the number of participants and the participation rate are shown in Table 9. The pooled participation rate in the Nordic countries was 45.2% in 2014. The participation rate among children was higher than among adults in the Nordic countries and was highest in Denmark (71.7%) and lowest in Norway (28.1%).

**Table 9: Number of invited children, eligible sample, number of participants and participation rate. NORMO 2014**

Country	Invited (n)	Eligible sample	Respondents (n)	Participation rate (%)
Denmark	835	834	598	71.7
Finland	1,250	1,250	500	40.0
Sweden	1,250	1,250	500	40.0
Iceland	905	905	514	56.8
Norway	1,250	1,205	358	28.7
All	5,490	5,488	2,479	45.2

Norway and Sweden had many who refused to participate (Table 10). Finland, Iceland, Sweden and Norway had a large number who could not be contacted. Norway had as well a high number of invited persons who could not be contacted due to telephone number not working.



**Table 10: Sample and reasons for non participation: Children (n). NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway
Sample drawn	835	1,250	1,250	905	1,250
Not eligible (moved, cannot be found, moved abroad), dead	1	0	0	0	1
Eligible sample	834	1,250	1,250	905	1,249
Interview accomplished	598	500	503	514	364
of these partly accomplished#	1	–	3	–	6
Reasons for non participation					
Did not want	89	158	206	35	416
No contact	108	536	460	328	279
Telephone number not working	16	7	51	3	113
Sickness, away in interview period, in hospital, language problems, other reasons	23	49	30	25	77
Total non participation	236	750	747	391	885

Note: #Partly interviews from Sweden and Norway are not included, thus “n” is 500 and 358, respectively.

Comparison of participation rates between 2011 and 2014 shows a large decrease in the participation rate in Denmark, but no change or an increase in the other Nordic countries. The pooled participation rate in the Nordic countries was similar in 2011 and 2014 (Table 11).

**Table 11: Participation rate among children (%). NORMO 2011 and 2014**

Country	Participation rate 2011* (%)	Participation rate 2014 (%)	Difference (percentage points)
Denmark	85.8	71.7	–14.1
Finland	40.0	40.0	0
Sweden	39.9	40.0	0.1
Iceland	51.8	56.8	5.0
Norway	28.2	28.7	0.5
All	45.4	45.2	–0.2

Note: \*Participation rate in 2011 is calculated slightly different than in 2014, but this did not impact results significantly.

### 4.2.3 Characteristics of the participants

#### Adults

Characteristics of the adult participants in 2011 and 2014 are shown in Table 12. In all the Nordic countries and in both survey years more women than men participated, and participation was highest in the oldest age group (45–64 years). When looking at all the Nordic countries together in 2014, the highest participation rate was observed among the high educated, while in 2011 the highest participation rate was found among the medium educated. This tendency was also found for Finland, Sweden and Iceland when

looking at each of the Nordic countries. In Denmark and Norway, the highest participation rate was found among the high educated in 2011 and 2014.

### Children

Characteristics of the participating children and the interviewed persons in 2011 and 2014 are shown in Table 13. In all the Nordic countries, almost the same proportion of boys and girls participated. In Finland and Norway, more girls than boys participated in 2011 and 2014 while in Sweden it was the opposite. In Iceland and Denmark, there was a change in the gender having the highest participation rate between 2011 and 2014. It was mainly the mother of the child who was interviewed both in 2011 and 2014, except in Norway in 2011 where a high proportion of fathers were interviewed. When looking at all the Nordic countries, the highest participation rate was seen among children with a high educated parent in 2011 and 2014. This was also found when looking at each of the five Nordic countries, except in Finland.

**Table 12: Characteristics of the adult study population. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		All Nordic countries	
	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)
<b>Gender<sup>#</sup></b>												
Male	1,014 46.4%	976 48.6%	922 46.0%	756 44.0%	885 46.9%	827 45.9%	938 46.6%	895 44.5%	514 48.3%	484 45.8%	4,273 46.7%	3,938 45.8%
Female	1,173 53.6%	1,031 51.4%	1,082 54.0%	961 56.0%	1,001 53.1%	974 54.1%	1,078 53.4%	1,117 55.5%	551 51.7%	573 54.2%	4,880 53.3%	4,656 54.2%
<b>Age</b>												
18–24 y	227 10.4%	230 11.5%	237 11.8%	157 9.1%	249 13.2%	184 10.2%	212 10.5%	164 8.2%	109 10.2%	114 10.8%	1,034 11.3%	849 9.9%
25–44 y	752 34.4%	651 32.4%	649 32.4%	532 31.0%	719 38.1%	699 38.8%	835 41.5%	808 40.2%	445 41.8%	392 37.1%	3,400 37.1%	3,082 35.9%
45–65 y	1,208 55.2%	1,127 56.1%	1,118 55.8%	1,028 59.9%	918 48.7%	918 51.0%	964 47.9%	1,040 51.7%	511 48.0%	551 52.1%	4,719 51.6%	4,664 54.3%
<b>Education<sup>@</sup></b>												
Low (up to 10 y)	355 16.2%	215 10.7%	303 15.2%	218 12.7%	217 11.7%	128 7.1%	513 24.4%	447 22.3%	69 6.5%	57 5.4%	1,457 16.0%	1,065 12.4%
Medium (10–12 y)	888 40.6%	689 34.3%	1,026 51.5%	681 39.8%	864 46.3%	752 41.9%	820 40.9%	671 33.4%	383 36.1%	350 33.2%	3,981 43.7%	3,143 36.6%
High (13+ y)	943 43.1%	1,104 55.0%	663 33.3%	814 47.5%	784 42.0%	916 51.0%	674 33.6%	890 44.3%	609 57.4%	649 61.3%	3,673 40.3%	4,370 50.9%

Note:           #One participant had missing data on gender.  
                   @Characteristics of the child study population are missing on some respondents.

Table 13: Gender of the participating child and parental education. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		All Nordic countries	
	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)	2011 (n, %)	2014 (n, %)
<b>Gender</b>												
Boys	319 52.4%	295 49.3%	246 49.2%	243 48.6%	272 54.5%	258 51.6%	247 47.7%	258 50.2%	169 47.9%	173 48.3%	1,253 50.5%	1,227 49.7%
Girls	290 47.6%	303 50.7%	254 50.8%	257 51.4%	227 45.5%	242 48.4%	271 52.3%	256 49.8%	184 52.1%	185 51.7%	1,226 49.5%	1,243 50.3%
<b>Gender of the interviewed</b>												
Men	14.9%	16.7%	8.6%	6.2%	7.8%	11.4%	13.6%	14.4%	42.5%	11.2%	— <sup>£</sup>	12.2%
Women	85.1%	83.3%	91.4%	93.8%	92.2%	88.6%	86.4%	85.6%	57.5%	88.8%	— <sup>£</sup>	87.8%
<b>Parental education<sup>@</sup></b>												
Low (up to 10 y)	39 6.4%	47 7.9%	17 3.4%	10 2.0%	8 1.6%	18 3.6%	100 19.3%	70 13.6%	16 4.6%	3 0.8%	180 7.3%	148 6.0%
Medium (10–12 y)	227 37.3%	113 19.1%	245 49.1%	167 33.4%	216 43.5%	147 29.6%	141 27.3%	130 25.3%	119 34.2%	77 21.6%	948 38.4%	634 25.8%
High (13+ y)	343 56.3%	432 73.0%	237 47.5%	323 64.6%	273 54.9%	332 66.8%	276 53.4%	313 61.0%	213 61.2%	276 77.6%	1,342 54.3%	1,676 68.2%

Note: <sup>@</sup>Data on educational level are missing on some respondents.

<sup>£</sup> Not calculated on regional level in 2011.

### 4.3 Discussion

Declining participation rates in population-based studies are a challenge that has been faced in many western countries during the past decades (Atrostic *et al.* 2001, de Heer 1999, de Heer and Israels, 1992). Participation in health examination studies, for example, has declined since the 1980's from around 80% to as low as 40% in some recent studies (Grotvedt *et al.* 2008, HIS/HES Database 2014). In Norway, participation rate in national dietary surveillance studies has declined with about 30 percentage points in both adult and adolescent populations from 1990's to 2015. In the Nordic countries, national postal or telephone surveys have similarly experienced declines from one percentage point to six percentage points over certain time frames, but increased rates have also been experienced in Iceland as is the case with NORMO. The participation rates in the most recent national surveys have varied between 48–69%, suggesting that national surveys have reached better representativeness than NORMO. Of the Nordic countries, only Denmark reached NORMO participation rates of the same magnitude as in the national surveys.

Low participation rates jeopardize the representativeness of results for the general population and bias the interpretations of results. In a Finnish study, it was estimated that the true prevalence of smoking could be higher than the study results suggested because of the decrease in the participation rate (Kopra *et al.* 2015).

Some previous studies suggest that non-participation is selective. The non-participants tend to be more often men (Korkeila *et al.* 2001, Lundberg *et al.* 2005, Sogaard *et al.* 2004, Eaker *et al.* 1998, Tolonen *et al.* 2006), from younger age groups (Lundberg *et al.* 2005, Sogaard *et al.* 2004, Eaker *et al.* 1998, Tolonen *et al.* 2006, Jackson *et al.* 1996, Shahar *et al.* 1996), single/not married (Korkeila *et al.* 2001, Lundberg *et al.* 2005, Sogaard *et al.* 2004, Tolonen *et al.* 2006, Shahar *et al.* 1996), from lower socio-economic groups (Korkeila *et al.* 2001, Lundberg *et al.* 2005, Sogaard *et al.* 2004, Tolonen *et al.* 2006, Jackson *et al.* 1996, Shahar *et al.* 1996, Cohen and Duffy, 2002, Demarest *et al.* 2013, Drivsholm *et al.* 2006), with lower income (Jackson *et al.* 1996), and living in metropolitan area (Eaker *et al.* 1998). Several of these characteristics are also known to be associated with health indicators such as daily smoking, alcohol use, and obesity (Borodulin *et al.* 2012). Furthermore, other characteristics that are previously reported for non-participants include worse self-rated health (Jackson *et al.* 1996, Cohen and Duffy, 2002, Drivsholm *et al.* 2006), higher disability benefits (Korkeila *et al.* 2001, Sogaard *et al.* 2004, Knudsen *et al.* 2010), higher hospitalization rates (Drivsholm *et al.* 2006, Kjoller and Thoning 2005) and more diagnosed diseases than

survey participants (Jackson *et al.* 1996). Non-participants have higher all-cause and cause specific mortality in the follow-up studies than survey participants (Hara *et al.* 2002, Jousilahti *et al.* 2005, Larsen *et al.* 2012, Une *et al.* 2000).

In the Nordic monitoring 2011 and 2014, the participants were older than the general population, and women were overrepresented. Furthermore, more participants with a low or medium education than with a high education refused to participate and this challenge seems to have increased from 2011 to 2014.

Because of this skewed distribution for participation with regard to gender, age, and education compared with the general population in the five Nordic countries, it was decided to weight the data in the statistical analyses.

#### **4.3.1     *How to overcome low participation rate?***

Potential ways to increase participation rates have been reported in earlier studies. Most of the existing literature has reported experiences from health examination studies while postal surveys and interviews studies have received less attention (Eaker *et al.* 1998; Edwards *et al.* 2002, Edwards *et al.* 2009, Tolonen *et al.* 2014). Some studies have suggested that for example monetary incentives (Edwards *et al.* 2014, Doody *et al.* 2003, Fox *et al.* 1988, Kopf *et al.* 2000, Schweitzer and Asch, 1995, Singer *et al.* 1999), shorter questionnaires (Edwards *et al.* 2002, Kalantar and Talley, 1999), reminders (Fox *et al.* 1988), pre-notification (Fox *et al.* 1988, Chun and Robertson, 1995), and first class postage and stamp (Fox *et al.* 1988, Schweitzer and Asch, 1995) increased participation. Providing both monetary and non-monetary incentives is reported to affect participation rates even better if the incentive is received immediately and not just after having participated (Edwards *et al.* 2010). Another potential way of increasing participation is related to contacting the subject and potentially creating the invitation more personal. This could be achieved with pre-notifications before sending the questionnaires and reminding about participation (Fox *et al.* 1988). One Swedish study reported that when questionnaires arrived on Friday, the participation rates were lower as compared to Tuesday (Eaker *et al.* 1998). One Finnish study sent short messages services (SMS) to mobile phones to remind the subjects about their participation and those receiving the message showed up to health examination more often (Virtanen *et al.* 2007, Tolonen *et al.* 2014). In Denmark, the participation rate has increased slightly in the Danish National Survey on Diet and Physical Activity between 2000 and 2011 (Lyhne *et al.* 2005, Pedersen *et al.* 2015), probably due to interviewers visiting participant twice and collecting the dietary records from participants.

In studies that reach the respondents by telephone, the number of attempted contact may be of importance such as 10 attempts resulting in markedly higher participation rates than lesser attempts (Fuchs *et al.* 2013). Also, the best times to call are in the evenings and Sunday (Weeks *et al.* 1987), yet these studies are based on older results and more modern techniques should be incorporated such as SMS messages and E-mails. Even using the means of social media could be used more efficiently, or at least tested and considered as an option to catch the respondent's attention.

In summary, to achieve high participation rates there is not just one solution. It is likely that best results are achieved when the study invests money in the recruitment phase and tailors different recruitment methods for different sub-populations. The more personalised the invitation and the more rewarding the study sounds, the higher are the participation rates. High participation rates will require higher total costs that are caused by more time in planning the recruitment techniques, more time spent in reaching the respondents, different types of questionnaires for sub-populations, and potential incentives.

## 5. Diet

In this chapter results on the population levels and the development in dietary intake in the Nordic countries are reported.

Dietary patterns rich in vegetables, pulses, fruits and berries, nuts and seeds, whole grains, fish and seafood, vegetable oils and vegetable oil-based fat spreads and low-fat dairy products are associated with lower risk of non-communicable diseases such as cardiovascular diseases, obesity, type 2 diabetes and some type of cancers (Nordic Council of Ministers 2014).

The dietary assessment method in the Nordic Monitoring System includes 15 foods/food groups, which are considered indicators for the overall dietary quality. In this chapter, the population levels and the development of the consumption of fruits and vegetables, whole grain, fish as well foods rich in saturated fat and added sugar are reported. These variables are mentioned in the “Nordic plan of Action for better health through diet and physical activity”, where goals and visions for dietary quality have been set (Nordic Council of Ministers 2006).

A dietary quality score is used to report the overall nutritional quality of the diet. A low dietary quality score between 0 to 4 is used as an indicator of a diet which is unhealthy in several parameters, e.g. low in fruits and vegetables, whole grain, fish and/or high in foods rich in saturated fat and added sugar. The proportion with a low dietary quality score (unhealthy diet) has been chosen as key variable in this chapter.

The emphasis in this chapter is to report the proportions with an unhealthy diet and fulfilment of selected food based dietary guidelines to cover the important factors regarding dietary quality. Results on unhealthy diet and fulfilling selected foodbased guidelines will only be commented to some extent as these variables are covered by data on the intake of fruits, vegetables, fish and whole grain. Data on the population levels and the development of the proportions with an unhealthy diet and fulfilling selected food based dietary guidelines according to age and education in each of the five Nordic countries are commented in this chapter, but data are not tabulated and only significant findings of the development from 2011 to 2014 will be shown in the text.

When comparing dietary intake between the Nordic countries, only countries where it is possible to identify one or more countries with the highest and/or lowest proportion with an unhealthy diet will be commented in the key findings below.



## 5.1 Key findings

### 5.1.1 Adults

- In 2014, one in five adults had an unhealthy diet in the Nordic region. The proportion with an unhealthy diet was higher in men than in women (24.7% vs. 18.4%). The lowest proportion with an unhealthy diet was observed in Norway and Finland and the highest in Sweden.
- Between 2011 and 2014, the intake of fish and whole grain bread and the proportion with a high consumption of sugar-rich foods decreased while the proportion with a high consumption of foods rich in saturated fat increased.
- In the Nordic region, the proportion with an unhealthy diet increased from 18.2% to 21.5% between 2011 and 2014. An increase in the proportion with an unhealthy diet was found in both men and women, 25–44- and 45–65-y-olds and among the low and high educated. However, the proportion with an unhealthy diet decreased in 18–24-y-olds.
- The social difference in diet (unhealthy diet) was large and decreased slightly between 2011 and 2014.

### 5.1.2 Children

- In 2014, one in seven children had an unhealthy diet in the Nordic region. The proportion with an unhealthy diet was higher in boys than in girls (17.5% vs. 13.7%). The highest proportion with an unhealthy diet was observed in Sweden.
- Between 2011 and 2014, the intake of fruits and vegetables and fish increased slightly while the intake of whole grain bread and the proportion with a high consumption of sugar-rich foods decreased.
- In the Nordic region, the proportion with an unhealthy diet did not change between 2011 and 2014. No change was also found when gender was analysed. However, the proportion with an unhealthy diet increased in children with a low educated parent and decreased in children with a high educated parent between 2011 and 2014.
- The social difference in diet (unhealthy diet) was large in 2014 and increased between 2011 and 2014.

### 5.1.3 Conclusions

The overall diet has become less healthy from 2011 to 2014 among adults in the Nordic region. An unfavorable development was seen for the intake of fish, whole grain and foods rich in saturated fat. Only the intake of added sugar developed favourably. Among children, the overall diet did not change in the Nordic region. Still, some minor improvements of the diet have occurred e.g. increased intake of fruits and vegetables and fish as well as a decreased intake of added sugar. But intake of whole grain decreased.

The social difference in diet was large among adults and children in the Nordic region. Data also indicate that social inequality in diet has not deepened further among adults, but deepened considerably among children.

## 5.2 Results

### 5.2.1 Adults

In 2014, the proportion with an unhealthy diet was 21.5% among adults in the Nordic region, but large differences were seen between the five Nordic countries (Table 14).

**Table 14: Ranking from lowest to highest proportion with an unhealthy diet among adults in the five Nordic countries. NORMO 2014**

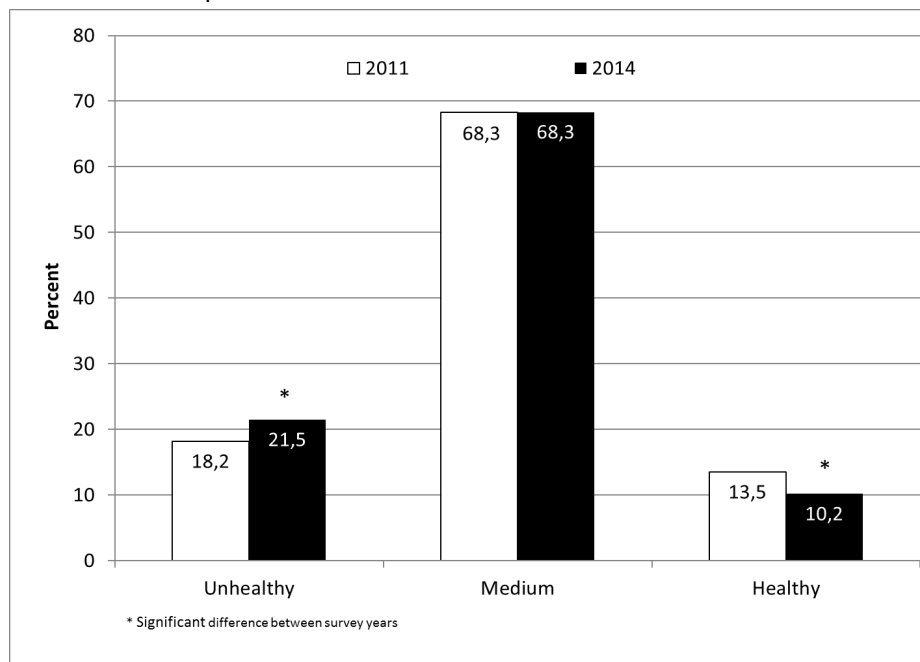
Country	Unhealthy diet (%)
Norway	14.4
Finland	15.4
Denmark	22.7
Iceland	24.5
Sweden	27.5

The proportion with an unhealthy diet was higher in Sweden than in the other Nordic countries. Furthermore, the proportion with an unhealthy diet was higher in Denmark and Iceland than in Finland and Norway.

Tables 15 and 16 show the population levels and the development from 2011 to 2014 in the proportion with an unhealthy diet and the intake of selected foods.

Between 2011 and 2014, the overall dietary quality score has decreased as the proportion with an unhealthy diet (dietary quality score 0–4) increased and the proportion with a healthy diet (dietary quality score 9–12) decreased (Figure 1).

**Figure 1: Population levels and the development in dietary quality among adults in the Nordic region. NORMO 2011 and 2014**



An increase in the proportion with an unhealthy diet was found in the Nordic region between 2011 and 2014, reflecting an increase in Sweden, Iceland and Norway. When analysing the overall dietary quality score, it showed a decrease in the Nordic region as well as in all the Nordic countries, except in Finland. In the Nordic region, an unfavorable development from 2011 to 2014 was seen for the intake of fish and whole grain bread (decreased) and the proportion with a high intake of foods rich in saturated fat (increased). The intake of whole grain bread decreased in all the Nordic countries, while the intake of fish decreased in Denmark and Norway. However, the decrease in the intake of fish was very small in the Nordic region. Furthermore, the proportion with a high consumption of foods rich in saturated fat increased in Sweden, Iceland and Norway.

The only favorable development among adults in the Nordic region was a decrease in the proportion with a high consumption of sugar-rich foods. This was also seen in Denmark, Finland and Norway while no change was found in Sweden and Iceland. When analysing the intake of fruit and vegetables in the Nordic region, no change was found but an increase was seen in Finland and Sweden and a decrease in Norway.

Table 15: Mean and proportion (95% CI) for estimates of dietary intake among adults in the Nordic countries. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>®</sup>	
	2011 (n=1,943)	2014 (n=1,969)	2011 (n=1,966)	2014 (n=1,561)	2011 (n=1,834)	2014 (n=1,700)	2011 (n=1,946)	2014 (n=1,916)	2011 (n=1,035)	2014 (n=961)	2011 (n=8,833)	2014 (n=8,144)
Dietary quality score <sup>#</sup>	6.2 (6.1;6.3)	6.0** (5.9;6.1)	6.5 (6.4;6.6)	6.5 (6.4;6.6)	5.9 (5.8;6.0)	5.7*** (5.6;5.8)	6.1 (6.0;6.2)	5.8*** (5.7;5.8)	7.0 (6.9;7.2)	6.6*** (6.4;6.7)	6.3 (6.3;6.4)	6.1*** (6.0;6.1)
High intake of sugar-rich foods <sup>‡</sup> (%)	36.7 (34.7;38.7)	32.4* (30.3;34.4)	34.6 (32.5;36.6)	30.3** (28.1;32.4)	24.7 (22.8;26.7)	24.5 (22.6;26.5)	42.1 (39.9;43.1)	40.9 (38.8;43.1)	25.8 (23.1;28.4)	21.7* (19.2;24.2)	29.8 (28.9;30.8)	27.1*** (26.1;28.0)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	31.2 (29.2;33.1)	28.3 <sup>-</sup> (26.3;30.3)	30.7 (28.6;32.7)	32.1 (29.8;34.3)	46.4 (44.1;48.6)	53.5*** (51.1;55.8)	32.0 (30.0;34.1)	40.2*** (38.0;42.3)	41.4 (38.4;44.3)	47.5*** (44.5;50.6)	38.6 (37.6;39.6)	42.3*** (41.2;43.3)
Fruits & vegetables "5+ a day" (%)	13.4 (11.9;14.8)	13.0 (11.5;14.4)	9.4 (8.1;10.6)	12.9*** (11.3;14.5)	12.5 (11.0;14.0)	14.3 (12.7;15.9)	8.7 (7.4;9.9)	7.0 <sup>-</sup> (5.9;8.1)	19.9 (17.5;22.3)	10.4*** (8.5;12.2)	13.4 (12.7;14.1)	12.8 (12.1;13.6)
Fish (main course twice/week) (%)	24.6 (22.7;26.5)	21.7* (19.9;23.5)	33.7 (31.7;35.8)	32.7 (30.5;35.0)	35.6 (33.5;37.8)	36.8 (34.6;39.0)	64.5 (62.4;66.6)	64.0 (61.9;66.1)	60.4 (57.5;63.3)	55.0* (52.0;58.0)	38.3 (37.3;39.3)	36.7* (35.7;37.7)
Whole grain bread (≥ 50% of daily bread intake) (%)	97.2 (96.5;97.9)	96.1 <sup>-</sup> (95.3;97.0)	98.0 (97.4;98.7)	95.6*** (94.6;96.6)	92.1 (90.9;93.4)	91.7 (90.4;93.1)	97.7 (97.1;98.4)	95.3*** (94.4;96.3)	97.2 (96.2;98.2)	96.9 (95.9;98.0)	95.5 (95.1;96.0)	94.6** (94.1;95.1)
Unhealthy diet <sup>‡</sup> (%)	21.3 (19.4;23.1)	22.7 (20.9;24.6)	15.7 (14.1;17.3)	15.4 (13.6;17.2)	23.0 (21.0;24.9)	27.5** (25.4;29.6)	19 (17.3;20.7)	24.5*** (22.6;26.4)	8.8 (7.1;10.5)	14.4*** (12-2;16.7)	18.2 (17.4;19.0)	21.5*** (20.6;22.4)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001 Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>®</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages.

<sup>‡</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>‡</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

Table 16: Mean (95% CI) intake of selected foods among adults in the Nordic countries. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=1,943)	2014 (n=1,969)	2011 (n=1,966)	2014 (n=1,561)	2011 (n=1,834)	2014 (n=1,700)	2011 (n=1,946)	2014 (n=1,916)	2011 (n=1,035)	2014 (n=961)	2011 (n=8,833)	2014 (n=8,144)
Fruits & vegetables* (freq./day)	2.6 (2.5;2.6)	2.6 (2.5;2.6)	2.3 (2.3;2.4)	2.6*** (2.5;2.6)	2.5 (2.5;2.6)	2.7* (2.6;2.7)	2.1 (2.1;2.2)	2.2 (2.0;2.2)	2.9 (2.8;3.0)	2.3*** (2.2;2.4)	2.6 (2.5;2.6)	2.5 (2.5;2.6)
Fruits* (freq./day)	1.5 (1.4;1.5)	1.4** (1.3;1.4)	1.1 (1.0;1.1)	1.2** (1.1;1.2)	1.2 (1.2;1.3)	1.2* (1.1;1.2)	1.1 (1.0;1.1)	1.0* (1.0;1.1)	1.2 (1.1;1.3)	1.1* (1.1;1.2)	1.2 (1.2;1.3)	1.2*** (1.2;1.2)
Vegetables (freq./day)	1.1 (1.1;1.1)	1.2*** (1.2;1.2)	1.3 (1.2;1.3)	1.4*** (1.3;1.4)	1.3 (1.2;1.3)	1.5*** (1.5;1.5)	1.1 (1.0;1.1)	1.1 (1.0;1.1)	1.7 (1.6;1.7)	1.2*** (1.1;1.2)	1.3 (1.3;1.3)	1.3* (1.3;1.4)
Fish (freq./week)	1.3 (1.2;1.3)	1.1* (1.1;1.2)	1.3 (1.3;1.4)	1.4 (1.3;1.5)	1.4 (1.4;1.5)	1.5 (1.4;1.5)	2.0 (1.9;2.0)	2.0 (1.9;2.1)	2.2 (2.0;2.3)	1.8*** (1.7;1.9)	1.5 (1.5;1.6)	1.5** (1.4;1.5)
Whole grain bread* (slices/day)	3.8 (3.7;3.9)	3.3*** (3.2;3.4)	4.2 (4.1;4.3)	3.7*** (3.6;3.9)	2.7 (2.6;2.8)	2.3*** (2.3;2.4)	2.4 (2.3;2.5)	2.2*** (2.1;2.2)	5.1 (4.9;5.3)	4.5*** (4.3;4.7)	3.7 (3.6;3.7)	3.3*** (3.2;3.3)

Note: \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests.

®Weighted according to population size in the five Nordic countries.

#Excluding fruit juice.

\*Whole grain bread is defined as wholemeal bread, rye bread and hard bread.

### 5.2.2 Gender

In 2014, the overall dietary quality score was lower and thus the proportion with an unhealthy diet higher in men than in women in the Nordic region (24.7% vs. 18.4%). This pattern was seen in all the Nordic countries, except Norway (Table 17 and 19). In the Nordic region, men had a lower intake of fruits, vegetables and fish than women, but a higher intake of wholegrain bread. However, the proportions eating at least half of their daily bread intake as whole grain bread were lower in men than women. Men consumed fewer healthy foods than women in the Nordic countries. Men had a lower intake of fruits and vegetables than women in all countries. The intake of fish was lower in men than women in Finland and Norway, but higher in men than women in Iceland. Men had a higher intake of whole grain bread than women in all countries except Denmark. The proportions with a high consumption of sugar-rich foods and foods rich in saturated fat were higher in men than in women.

Between 2011 and 2014, the proportion with an unhealthy diet increased both in men and women in the Nordic region. The proportion with an unhealthy diet increased more in men than in women. In men, the proportions with a high consumption of sugar-rich foods, intake of fish and whole grain bread decreased from 2011 to 2014 while the proportion with a high consumption of foods rich in saturated fat increased. An increase in the proportion with a high consumption of foods rich in saturated fat was seen among men in Sweden, Iceland and Norway and among women in Iceland while a decrease was seen among men in Denmark. In women, the intake of fruits and vegetables and whole grain bread decreased in the Nordic region, but the decrease in whole grain bread intake was very small. The proportion with a high consumption of sugar-rich foods decreased in women in the Nordic region and in women in Finland. For other foods, mixed results of the development from 2011 to 2014 were found for men and women (Table 17–20).

Table 17: Mean and proportion (95% CI) for estimates of dietary intake among *men* in the Nordic countries. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=904)	2014 (n=955)	2011 (n=898)	2014 (n=679)	2011 (n=864)	2014 (n=785)	2011 (n=935)	2014 (n=867)	2011 (n=502)	2014 (n=436)	2011 (n=4,121)	2014 (n=3,733)
Dietary quality score <sup>#</sup>	5.9 (5.8;6.0)	5.7* (5.6;5.9)	6.4 (6.3;6.5)	6.3 (6.1;6.4)	5.7 (5.6;5.9)	5.5* (5.4;5.7)	5.9 (5.8;6.1)	5.6*** (5.5;5.7)	6.9 (6.8;7.1)	6.4*** (6.2;6.6)	6.2 (6.1;6.2)	5.9*** (5.8;5.9)
High intake of sugar-rich foods <sup>*</sup> (%)	41.4 (38.3;44.4)	35.2* (32.2;38.2)	33.1 (30.1;36.2)	30.1 (26.8;33.4)	26.0 (23.2;28.9)	26.9 (23.9;30.0)	49.2 (46.0;52.4)	45.4 (45.2;48.7)	29.0 (25.1;32.9)	21.8* (18.1;25.6)	31.7 (30.3;33.1)	28.7* (27.3;30.1)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	36.5 (33.5;39.4)	31.6* (28.7;34.5)	31.7 (28.6;34.8)	35.9 (32.4;39.4)	45.3 (41.9;48.9)	55.7*** (52.3;59.1)	31.9 (28.9;35.0)	42.2*** (38.9;45.5)	41.7 (37.4;46.0)	52.6** (48.1;57.2)	39.7 (38.3;41.2)	45.5*** (43.9;47.1)
Fruits & vegetables "5+ a day" (%)	10.3 (8.4;12.2)	9.9 (8.1;11.8)	6.7 (5.1;8.4)	7.3 (5.4;9.1)	8.5 (6.7;10.3)	9.8 (7.7;11.8)	5.8 (4.3;7.2)	4.6 (3.3;6.0)	16.6 (13.3;19.8)	6.9*** (4.6;9.2)	10.1 (9.2;11.0)	8.7* (7.8;9.6)
Fish (main course twice/week) (%)	22.8 (20.1;25.5)	20.0 (17.5;22.5)	31.0 (28.0;34.0)	29.8 (26.6;33.1)	33.8 (30.3;36.9)	35.2 (32.0;38.5)	66.4 (63.4;69.4)	64.2 (61.0;67.3)	61.5 (57.3;65.7)	50.8*** (46.4;55.3)	37.1 (35.6;38.5)	34.1** (32.7;35.6)
Whole grain bread (≥ 50% of daily bread intake) (%)	96.5 (95.3;97.6)	94.9 <sup>~</sup> (93.5;96.3)	96.9 (95.8;98.0)	94.5* (92.8;96.2)	90.0 (88.0;92.0)	89.2 (87.0;91.3)	96.9 (95.8;98.0)	93.0*** (91.3;94.7)	97.4 (96.0;98.8)	96.1 (94.2;97.9)	94.4 (93.7;95.1)	92.9** (92.1;93.7)
Unhealthy diet <sup>§</sup> (%)	24.5 (21.7;27.4)	27.5 (24.7;30.3)	18.2 (15.7;20.7)	18.5 (15.6;21.4)	24.8 (21.9;27.6)	29.7* (26.6;32.9)	21.5 (18.9;24.2)	27.5** (24.5;30.5)	8.2 (5.8;10.6)	17.1*** (13.5;20.7)	19.9 (18.7;21.1)	24.7*** (23.3;26.1)

Note: <sup>~</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages.

<sup>\*</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>§</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

**Table 18: Mean (95% CI) intake of selected foods among *men* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=904)	2014 (n=955)	2011 (n=898)	2014 (n=679)	2011 (n=864)	2014 (n=785)	2011 (n=935)	2014 (n=867)	2011 (n=502)	2014 (n=436)	2011 (n=4,121)	2014 (n=3,733)
Fruits & vegetables <sup>#</sup> (freq./day)	2.3 (2.2;2.4)	2.3 (2.2;2.3)	2.0 (1.9;2.1)	2.1 (2.0;2.2)	2.1 (2.1;2.2)	2.4*** (2.3;2.5)	1.9 (1.8;2.0)	1.9 (1.8;1.9)	2.5 (2.3;2.6)	2.0*** (1.9;2.2)	2.2 (2.2;2.2)	2.2 (2.2;2.3)
Fruits <sup>#</sup> (freq./day)	1.3 (1.2;1.4)	1.2* (1.1;1.3)	0.9 (0.8;0.9)	0.9 (0.8;1.0)	1.0 (0.9;1.1)	1.0 (0.9;1.1)	0.9 (0.9;1.0)	0.9 (0.8;0.9)	1.1 (1.0;1.2)	1.0 <sup>-</sup> (0.9;1.0)	1.1 (1.0;1.1)	1.0 <sup>-</sup> (1.0;1.1)
Vegetables (freq./day)	0.9 (0.9;1.0)	1.1** (1.0;1.1)	1.1 (1.0;1.1)	1.2 <sup>-</sup> (1.1;1.2)	1.1 (1.1;1.2)	1.4*** (1.3;1.4)	0.9 (0.9;1.0)	1.0 (0.9;1.0)	1.4 (1.3;1.5)	1.1*** (1.0;1.1)	1.1 (1.1;1.2)	1.2** (1.2;1.2)
Fish (freq./week)	1.2 (1.1;1.3)	1.1* (1.0;1.2)	1.2 (1.2;1.3)	1.3 (1.2;1.4)	1.3 (1.3;1.4)	1.4 (1.3;1.5)	2.0 (2.0;2.1)	2.1 (2.0;2.2)	2.2 (2.0;2.4)	1.7*** (1.6;1.8)	1.5 (1.4;1.5)	1.4** (1.3;1.4)
Whole grain bread <sup>‡</sup> (slices/day)	4.4 (4.2;4.5)	3.4*** (3.2;3.5)	4.7 (4.5;4.9)	4.4* (4.2;4.6)	3.0 (2.8;3.2)	2.7** (2.5;2.8)	2.7 (2.6;2.9)	2.4*** (2.2;2.5)	6.0 (5.6;6.3)	5.2*** (4.9;5.5)	4.2 (4.1;4.3)	3.6*** (3.6;3.7)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Excluding fruit juice.

<sup>‡</sup>Whole grain bread is defined as wholemeal bread, rye bread and hard bread.



**Table 19: Mean and proportion (95% CI) for estimates of dietary intake among women in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=1,039)	2014 (n=1,019)	2011 (n=1,050)	2014 (n=876)	2011 (n=970)	2014 (n=915)	2011 (n=1,071)	2014 (n=1,095)	2011 (n=533)	2014 (n=525)	2011 (n=4,712)	2014 (n=4,408)
Dietary quality score <sup>#</sup>	6.4 (6.3;6.5)	6.2* (6.1;6.3)	6.6 (6.5;6.8)	6.7 (6.6;6.8)	6.1 (6.0;6.2)	5.9** (5.7;6.0)	6.2 (6.1;6.3)	5.9*** (5.8;6.0)	7.2 (7.0;7.3)	6.7*** (6.5;6.8)	6.5 (6.4;6.5)	6.3*** (6.2;6.3)
High intake of sugar-rich foods <sup>†</sup> (%)	31.9 (29.3;34.6)	29.4 (26.6;32.2)	35.6 (33.1;36.8)	30.5** (27.5;33.4)	23.4 (20.8;26.0)	22.1 (19.5;24.7)	34.8 (32.0;37.7)	36.4 (33.5;39.2)	22.4 (18.9;25.9)	21.5 (18.1;24.9)	27.9 (26.7;29.2)	25.5* (24.2;26.8)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	25.8 (23.3;28.4)	25.0 (22.3;27.6)	29.7 (27.0;32.5)	28.6~ (25.6;31.5)	47.4 (44.3;50.5)	51.2 (48.0;54.4)	32.1 (29.3;34.9)	38.2*** (35.3;41.0)	41.1 (36.9;45.2)	42.5 (38.5;46.6)	37.5 (36.1;38.9)	39.1** (37.6;40.5)
Fruits & vegetables "5+ a day" (%)	16.5 (14.3;18.6)	16.0 (13.8;18.3)	11.8 (9.9;13.7)	18.2*** (15.7;20.6)	16.6 (14.3;18.9)	18.9 (16.4;21.3)	11.6 (9.7;13.5)	9.4~ (7.7;11.1)	23.4 (19.9;27.0)	13.9*** (11.0;16.7)	16.7 (15.7;17.8)	17.0 (15.9;18.1)
Fish (main course twice/week) (%)	26.4 (23.8;29.1)	23.5 (20.9;26.1)	36.3 (33.5;39.2)	35.5 (32.4;38.5)	37.5 (34.5;40.5)	38.4 (35.4;41.5)	62.8 (59.7;65.5)	63.9 (61.0;66.7)	59.2 (55.1;63.3)	59.2 (55.1;63.2)	39.5 (38.1;40.9)	39.2 (37.8;40.6)
Whole grain bread (≥ 50% of daily bread intake) (%)	97.8 (97.0;98.7)	97.3 (96.3;98.3)	99.2 (98.6;99.7)	96.6*** (95.4;97.8)	94.3 (92.8;95.8)	94.4 (92.9;95.9)	98.6 (97.9;99.3)	97.7 (96.8;98.6)	97.0 (95.6;98.4)	97.8 (96.5;99.0)	96.7 (96.2;97.2)	96.2 (95.7;96.8)
Unhealthy diet <sup>§</sup> (%)	17.9 (15.6;20.3)	17.9 (15.5;20.2)	13.3 (11.3;15.4)	12.6 (10.4;14.7)	21.1 (18.6;23.7)	25.2* (22.5;28.0)	16.5 (14.2;18.7)	21.4** (19.0;23.9)	9.4 (7.0;11.9)	11.8 (9.1;14.6)	16.4 (15.4;17.5)	18.4* (17.2;19.5)

Note: ~p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages.

<sup>†</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>§</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

**Table 20: Mean (95% CI) intake of selected foods among women in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=1,039)	2014 (n=1,019)	2011 (n=1,050)	2014 (n=876)	2011 (n=970)	2014 (n=915)	2011 (n=1,071)	2014 (n=1,095)	2011 (n=533)	2014 (n=525)	2011 (n=4,712)	2014 (n=4,408)
Fruits & vegetables# (freq./d)	2.9 (2.8;3.0)	2.9 (2.8;3.0)	2.7 (2.6;2.8)	3.0*** (2.9;3.1)	2.9 (2.8;3.0)	3.0 (2.9;3.1)	2.4 (2.3;2.5)	2.3 (2.3;2.4)	3.3 (3.1;3.4)	2.5*** (2.4;2.7)	2.9 (2.9;3.0)	2.9* (2.8;2.9)
Fruits# (freq./d)	1.6 (1.6;1.7)	1.5* (1.4;1.6)	1.3 (1.2;1.3)	1.4*** (1.3;1.5)	1.5 (1.4;1.5)	1.3*** (1.3;1.4)	1.2 (1.2;1.3)	1.2* (1.1;1.2)	1.4 (1.3;1.4)	1.3 (1.2;1.3)	1.4 (1.4;1.5)	1.4*** (1.3;1.4)
Vegetables (freq./d)	1.3 (1.2;1.3)	1.3* (1.3;1.4)	1.4 (1.4;1.5)	1.6*** (1.5;1.7)	1.4 (1.4;1.5)	1.6*** (1.6;1.7)	1.2 (1.1;1.2)	1.2 (1.1;1.2)	1.9 (1.8;2.0)	1.3*** (1.2;1.3)	1.5 (1.5;1.5)	1.5 (1.5;1.5)
Fish (freq./week)	1.3 (1.2;1.4)	1.2 (1.1;1.3)	1.4 (1.3;1.5)	1.5 (1.4;1.6)	1.5 (1.4;1.6)	1.5 (1.4;1.6)	1.9 (1.8;2.0)	1.9 (1.8;2.0)	2.1 (1.9;2.3)	2.0 (1.8;2.1)	1.6 (1.5;1.6)	1.5 (1.5;1.6)
Whole grain bread* (slices/d)	3.2 (3.1;3.3)	3.2 (3.0;3.3)	3.7 (3.5;3.8)	3.1*** (3.0;3.3)	2.3 (2.2;2.5)	2.0*** (1.9;2.1)	2.1 (2.0;2.1)	2.0 (1.9;2.1)	4.1 (3.9;4.4)	3.9 <sup>~</sup> (3.7;4.1)	3.2 (3.1;3.2)	2.9*** (2.8;2.9)

Note: <sup>~</sup>p<0.10, \*p<0.05, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests.

®Weighted according to population size in the five Nordic countries.

#Excluding fruit juice.

\*Whole grain bread is defined as wholemeal bread, rye bread and hard bread.

### 5.2.3 Age

The proportion with an unhealthy diet in the Nordic region was higher in 25–44-y-olds than in 18–24- and 45–65-y-olds (Table 21).

In Denmark, a higher proportion with an unhealthy diet was found in 25–44- and 45–65-y-olds than in 18–24-y-olds. In Finland, a higher proportion with an unhealthy diet was seen in 25–44-y-olds than in 45–65-y-olds. In Sweden, the highest proportion with an unhealthy diet was seen in 25–44-y-olds, and moreover a higher proportion with an unhealthy diet was found in 18–24-y-olds than in 45–65-y-olds. In Iceland, a higher proportion with an unhealthy diet was seen in 45–65-y-olds than in 18–24- and 25–44-y-olds. No difference between age groups was found in Norway.

In the Nordic region, the lowest proportions with a high consumption of sugar-rich foods and foods rich in saturated fat were seen in 18–24-y-olds. The intake of fruits and vegetables did not differ between age groups in the Nordic region. In Iceland, 18–24-y-olds had a higher intake of fruits and vegetables than 25–44- and 45–65-y-olds. In Sweden, the lowest intake of fruits and vegetables was seen in 25–44-y-olds. The intake of fish increased across the age groups in the Nordic region. The intake of fish was higher among the 45–65-y-olds than in the 18–24-y-olds in all the Nordic countries, except in Denmark.

In the Nordic region between 2011 and 2014, the proportion with an unhealthy diet increased in 25–44- and 45–65-y-olds and decreased in 18–24-y-olds. The overall dietary quality score showed a decrease in 25–44- and 45–65-y-olds reflecting the increased proportion with an unhealthy diet in these age groups. Data in each of the five Nordic countries showed that the proportion with an unhealthy diet increased from 2011 to 2014 in 25–44-y-olds in Sweden (from 25.5% to 35.8%), Iceland (from 22.4% to 31.6%) and Norway (from 9.7% to 15.4%) and in 45–65-y-olds in Denmark (from 19.6% to 23.5%) and Norway (from 5.6% to 14.1%). In the Nordic region, the proportion with a high consumption of sugar-rich foods decreased and the proportion with a high consumption of foods rich in saturated fat increased in 18–24-y-olds between 2011 and 2014. Furthermore, the intake of whole grain bread decreased in 18–24-y-olds, but the proportion eating at least half of the daily bread intake as whole grain bread increased.

In 25–44-y-olds, the proportions with a high consumption of sugar-rich foods and whole grain bread decreased from 2011 to 2014 while the proportion with a high consumption of foods rich in saturated fat increased.

In 45–65-y-olds, an increase in the proportion with a high consumption of foods rich in saturated fat and a decrease in the intake of fish and whole grain bread were seen between 2011 and 2014.

In 25–44-y-olds, the intake of whole grain bread decreased in Denmark, Finland, Sweden and Iceland. For other foods, mixed results of the development from 2011 to 2014 were found in the three age groups in the Nordic countries.

**Table 21: Mean and proportion (95% CI) for estimates of dietary intake *among adults according to age* in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	18–24 y		25–44 y		45–65 y	
	2011 (n=987)	2014 (n=779)	2011 (n=3,274)	2014 (n=29,163)	2011 (n=4,572)	2014 (n=4,433)
Dietary quality score <sup>#</sup>	6.0 (5.8;6.1)	6.1 <sup>~</sup> (6.0;6.3)	6.1 (6.1;6.2)	5.8*** (5.7;5.8)	6.6 (6.6;6.7)	6.3*** (6.3;6.4)
High intake of sugar-rich foods <sup>§</sup> (%)	31.5 (28.7;34.3)	21.1*** (18.4;23.8)	30.9 (29.3;32.4)	27.2** (25.6;28.8)	28.1 (26.8;29.3)	29.0 (27.7;30.3)
High intake of foods rich in sat. fat <sup>¶</sup> (%)	31.6 (28.7;34.5)	34.8** (31.6;38.0)	37.8 (36.1;39.4)	43.7*** (41.9;45.5)	41.5 (40.0;42.9)	43.4** (41.9;44.8)
Fruits & vegetables "5+ a day" (%)	12.3 (10.3;14.3)	14.7 (12.4;17.1)	14.1 (12.9;15.3)	12.2* (11.0;13.4)	13.2 (12.3;14.2)	12.6 (11.6;13.6)
Fish (main course twice/week) (%)	31.1 (28.3;33.9)	30.1 (27.1;33.2)	35.4 (33.7;37.0)	33.8 (32.1;35.5)	43.3 (41.9;44.7)	41.9 (40.5;43.3)
Whole grain bread (≥ 50% of daily bread intake) (%)	91.2 (89.5;92.9)	96.5*** (95.2;97.8)	95.2 (94.5;96.0)	92.7*** (91.7;93.6)	97.1 (96.6;97.6)	95.5*** (94.9;96.2)
Unhealthy diet <sup>  </sup> (%)	24.0 (21.4;26.7)	18.7** (16.0;21.3)	20.4 (19.0;21.7)	26.9*** (25.3;28.3)	14.4 (13.4;15.4)	17.6*** (16.5;18.7)

Note: <sup>~</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages.

<sup>\*</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>¶</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>||</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

**Table 22: Mean (95% CI) intake of selected foods *among adults according to age* in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	18–24 y		25–44 y		45–65 y	
	2011 (n=987)	2014 (n=779)	2011 (n=3,274)	2014 (n=29,163)	2011 (n=4,572)	2014 (n=4,433)
Fruits & vegetables <sup>#</sup> (freq./d)	2.5 (2.4;2.6)	2.5 (2.4;2.6)	2.6 (2.5;2.6)	2.5 <sup>-</sup> (2.5;2.6)	2.6 (2.5;2.6)	2.5 (2.5;2.6)
Fruits <sup>#</sup> (freq./d)	1.2 (1.1;1.2)	1.2 (1.1;1.2)	1.2 (1.2;1.2)	1.1 <sup>**</sup> (1.1;1.2)	1.3 (1.3;1.3)	1.3 <sup>**</sup> (1.2;1.3)
Vegetables (freq./d)	1.3 (1.2;1.4)	1.4 (1.3;1.4)	1.4 (1.3;1.4)	1.4 (1.4;1.4)	1.3 (1.2;1.3)	1.3 (1.3;1.3)
Fish (freq./week)	1.2 (1.2;1.3)	1.3 (1.2;1.4)	1.4 (1.4;1.5)	1.4 (1.3;1.4)	1.7 (1.6;1.8)	1.6 <sup>**</sup> (1.5;1.6)
Whole grain bread <sup>*</sup> (slices/d)	3.2 (3.0;3.4)	2.8 <sup>**</sup> (2.7;3.0)	3.5 (3.4;3.6)	3.0 <sup>***</sup> (2.9;3.1)	4.0 (3.9;4.0)	3.7 <sup>***</sup> (3.6;3.7)

Note: <sup>-</sup>p<0.10, <sup>\*</sup>p<0.05, <sup>\*\*</sup>p<0.01, <sup>\*\*\*</sup>p<0.001. Differences between survey years 2011 and 2014 using t-tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Excluding fruit juice.

<sup>\*</sup>Whole grain bread is defined as wholemeal bread, rye bread and hard bread.

#### 5.2.4 Education

In 2014, an inverse social gradient was found in the proportion with an unhealthy diet in the Nordic region, i.e. the proportion with an unhealthy diet decreased with increasing level of education (Table 23). When analysing each of the five Nordic countries, large social differences ( $\geq 20\%$ ) in diet (unhealthy diet) were seen in all countries, except in Iceland with a moderate difference.

In the Nordic region, the proportion with an unhealthy diet was higher among the low and medium educated than among the high educated. The overall dietary quality score was lower among the low and medium educated than among the high educated accordingly. In Denmark, a higher proportion with an unhealthy diet was seen among the medium educated than among the high educated, while in Finland and Sweden, a higher proportion with an unhealthy diet was found among the low and medium educated than among the high educated. In Norway, a higher proportion with an unhealthy diet was found among the low educated than among the medium and high educated. In Iceland, no difference between education groups was found in unhealthy diet.

In the Nordic region, the highest proportion with a high consumption of sugar-rich foods was found among the low educated while the lowest proportion was found among the high educated (Table 23). The intake of fish and fruits and vegetables increased across the education groups in the Nordic region (Table 24). Almost the same pattern was seen for fish in Finland, Sweden and Norway, while no social gradient was seen in Denmark and Iceland. The intake of fruits and vegetables was higher in the higher educated than the low and medium educated in all countries, except Norway. In Norway the high educated had a higher intake of fruits and vegetables than the low educated. The intake of whole grain bread was higher among the low educated than the medium and high educated.

**Table 23: Mean and proportion (95% CI) for estimates of dietary intake *among adults according to education* in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=1,394)	2014 (n=1,002)	2011 (n=3,833)	2014 (n=2,970)	2011 (n=3,570)	2014 (n=4,161)
Dietary quality score <sup>#</sup>	6.2 (6.1;6.3)	5.8*** (5.7;5.9)	6.1 (6.0;6.2)	6.0* (5.9;6.1)	6.6 (6.6;6.7)	6.3*** (6.3;6.4)
High intake of sugar-rich foods <sup>*</sup> (%)	35.3 (32.6;38.1)	33.6 (30.2;36.9)	30.5 (29.1;31.9)	27.2** (25.6;28.7)	25.5 (24.2;26.9)	24.4* (23.2;25.7)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	35.8 (33.0;38.7)	44.0*** (40.4;47.6)	40.2 (38.7;41.8)	42.2 (40.4;43.9)	37.2 (35.7;38.8)	40.2* (38.8;41.7)
Fruits & vegetables "5+ a day" (%)	10.0 (8.3;11.8)	10.8 (8.6;13.0)	11.3 (10.3;12.3)	12.0 (10.9;13.2)	18.3 (17.1;19.5)	14.9*** (13.9;15.9)
Fish (main course twice/week) (%)	31.7 (28.9;34.4)	27.3* (24.1;30.4)	33.5 (32.1;35.0)	34.2 (32.6;35.9)	46.3 (44.7;47.8)	43.8* (42.4;45.3)
Whole grain bread (≥ 50% of daily bread intake) (%)	95.2 (93.9;96.4)	92.8* (90.9;94.7)	94.7 (94.0;95.4)	94.6 (93.8;95.4)	96.9 (96.3;97.4)	95.5** (94.9;96.1)
Unhealthy diet <sup>§</sup> (%)	20.6 (18.2;23.1)	25.7* (22.5;28.9)	21.2 (19.9;22.5)	22.9 <sup>-</sup> (21.4;24.4)	13.4 (12.3;14.5)	17.0*** (15.8;18.1)
Relative difference un-healthy diet <sup>  </sup> (%)	—	—	—	—	-54	-51

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages).

<sup>\*</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>§</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

<sup>||</sup>Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

**Table 24: Mean (95% CI) intake of selected foods among adults according to education in the Nordic region. NORMO 2011 and 2014**

	Nordic region®					
	Low		Medium		High	
	2011 (n=1,394)	2014 (n=1,002)	2011 (n=3,833)	2014 (n=2,970)	2011 (n=3,570)	2014 (n=4,161)
Fruits & vegetables# (freq./d)	2.3 (2.2;2.4)	2.3 (2.2;2.4)	2.4 (2.4;2.5)	2.4 (2.4;2.5)	2.9 (2.8;2.9)	2.8** (2.7;2.8)
Fruits# (freq./d)	1.2 (1.2;1.3)	1.1* (1.1;1.2)	1.2 (1.1;1.2)	1.1 (1.1;1.2)	1.4 (1.3;1.4)	1.3** (1.3;1.3)
Vegetables(freq./d)	1.1 (1.0;1.1)	1.1* (1.1;1.2)	1.2 (1.2;1.3)	1.3* (1.3;1.3)	1.5 (1.5;1.6)	1.5 (1.5;1.5)
Fish (freq./week)	1.4 (1.3;1.4)	1.2* (1.1;1.3)	1.4 (1.4;1.5)	1.4 (1.3;1.5)	1.7 (1.7;1.8)	1.6* (1.6;1.7)
Whole grain bread* (slices/d)	4.0 (3.8;4.2)	3.6** (3.4;3.8)	3.7 (3.6;3.7)	3.2*** (3.1;3.3)	3.5 (3.5;3.6)	3.1*** (3.1;3.2)

Note: \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests.

@Weighted according to population size in the five Nordic countries.

#Excluding fruit juice.

\*Whole grain bread is defined as wholemeal bread, rye bread and hard bread.

The proportion with an unhealthy diet increased among the low and high educated from 2011 to 2014 in the Nordic region. In accordance with these results, the overall dietary quality score decreased in all education groups. Analyses in each of the five Nordic countries found that the proportion with an unhealthy diet increased between 2011 and 2014 among the low educated in Sweden (from 22.1% to 36.1%) and Norway (from 10.5% to 24.6%) and among the high educated in Denmark (from 15.1% to 18.6%), Iceland (from 16.0% to 23.2%) and Norway (from 5.0% to 11.7%).

A decrease in the proportion with a high consumption of sugar-rich foods was seen among the medium and high educated in the Nordic region from 2011 to 2014. The proportion with a high consumption of foods rich in saturated fat increased among the low and high educated. The intake of fruits and vegetables decreased among the high educated between 2011 and 2014 while the intake of fish decreased among the low and high educated. Intake of whole grain bread decreased in all education groups (Table 24).

Between 2011 and 2014, the intake of fruits decreased among the high educated in Denmark, Island and Norway and increased in Finland, while the intake of vegetables increased in Denmark, Finland and Norway and decreased in Sweden among the high

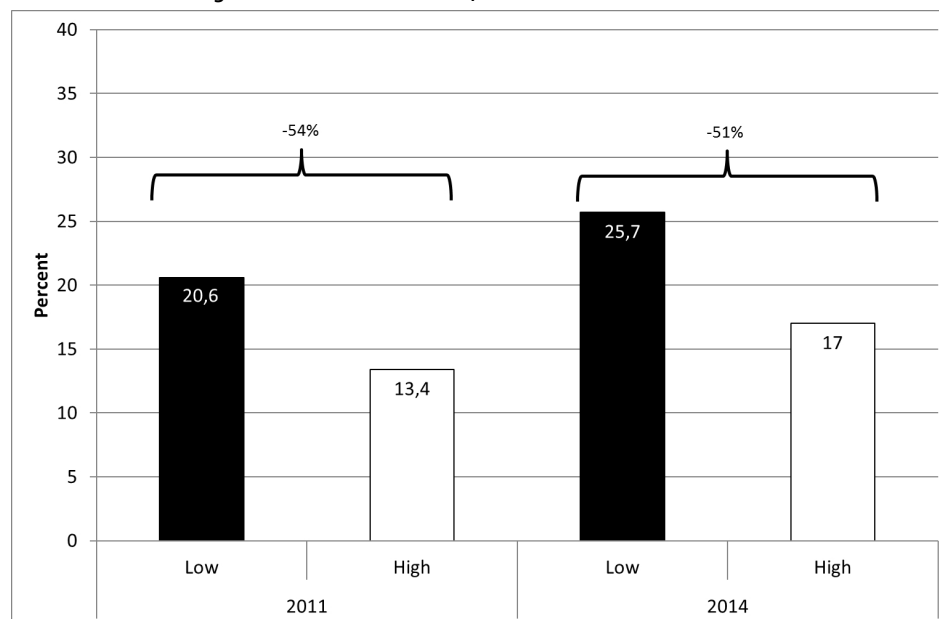


educated. For other foods, mixed results of the development from 2011 to 2014 were seen in the three education groups in the Nordic countries.

As the proportion with an unhealthy diet increased among both the low and high educated between 2011 and 2014, the social difference in diet did not change in the Nordic region (Figure 2).

In Denmark and Iceland, the social difference in diet decreased between 2011 and 2014 due to an increase in the proportion with an unhealthy diet among the high educated. In Sweden, the social difference in diet increased because the proportion with an unhealthy diet increased among the low educated. In Finland no change was seen in proportion with an unhealthy diet among the low and high educated and in Norway an increase in proportion with an unhealthy diet was seen in both the low and high educated. Most of the changes in the low and high education group in each of five Nordic countries were not statistically significant.

**Figure 2: The development from 2011 to 2014 in the social difference in diet (unhealthy diet) among adults in the Nordic region. NORMO 2011 and 2014**



### 5.2.5 Children

Results showed that one in seven children in the Nordic region had an unhealthy diet in 2014. The proportion with an unhealthy diet among children in the five Nordic countries is shown in Table 25. The proportion with an unhealthy diet was higher in Sweden than in the other Nordic countries and higher in Iceland than in Norway.

**Table 25: Ranking from lowest to highest proportion with an unhealthy diet among children in the five Nordic countries. NORMO 2014**

Country	Unhealthy diet (%)
Norway	10.1
Finland	12.6
Denmark	12.8
Iceland	15.1
Sweden	22.2

Table 26 and 27 show changes in the proportions with an unhealthy diet and following specific food based dietary guidelines and mean intake of selected foods among children in the Nordic region. The proportion with an unhealthy diet did not change from 2011 to 2014 among children in the Nordic region, however the proportion with an unhealthy diet decreased among children in Finland.

The lowest proportion with a high consumption of foods rich in saturated fat was found in Denmark.<sup>3</sup> The lowest proportion with a high consumption of sugar-rich foods was found in Norway (Table 26).<sup>4</sup> The lowest intake of fruits and vegetables was found in Iceland and Norway while the highest intake was found in Denmark and Sweden (Table 27). The lowest intake of fish was seen in Denmark and the highest in Iceland, while the lowest intake of whole grain bread was found in Iceland and Sweden and the highest in Norway.

Almost the same countries was found with the highest or lowest proportions eating “5+ a day” (fruits and vegetables), fish twice a week and at least half of their daily bread intake as whole grain bread as when looking at the food intake.

Between 2011 and 2014, the overall dietary quality score and the proportion with an unhealthy diet did not change among children in the Nordic region (Figure 3). Still, some favorable dietary changes occurred from 2011 to 2014 as the proportion with a high consumption of sugar-rich foods decreased among children in the Nordic region (Table 26)

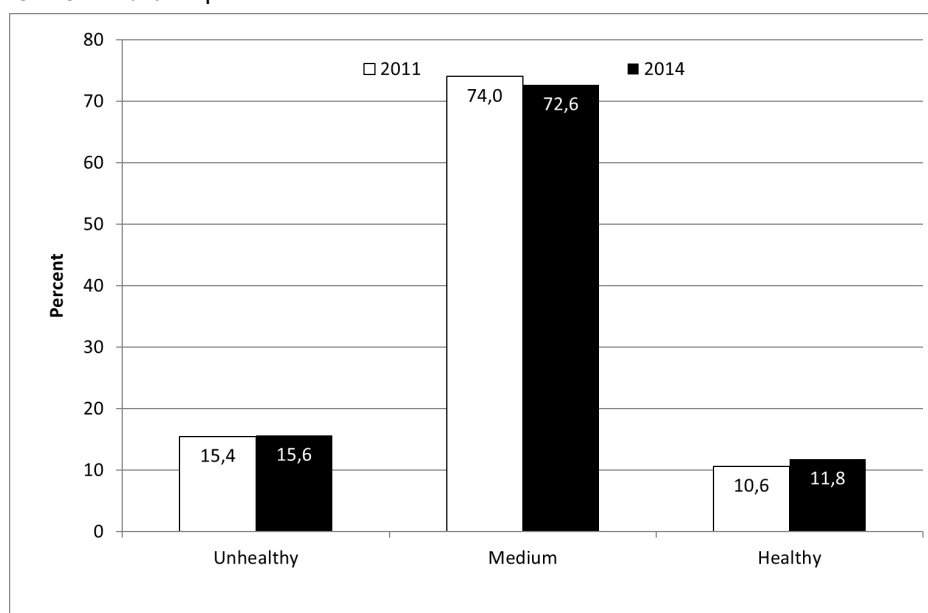
<sup>3</sup> High consumption of food rich in saturated fats (fat used on bread and for cooking, full fat cheese).

<sup>4</sup> High consumption of sugar-rich foods (chocolate/candy, cakes, sugar sweetened soft drinks).

and the intake of fruits and vegetables and fish increased (Table 27). In addition, the intake of whole grain bread decreased. Most of the dietary changes were small.

Between 2011 and 2014, the proportion with a high consumption of foods rich in saturated fat decreased among children in Denmark. The intake of fruit and vegetables increased among children in Finland and Sweden and the intake of fish increased among children in Denmark, Finland and Iceland while the intake of whole grain bread decreased among children in Iceland and Norway (Table 26 and 27).

**Figure 3: Population level and development in dietary quality among children in the Nordic region. NORMO 2011 and 2014**



**Table 26: Mean and proportion (95% CI) for estimates of dietary intake among children in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n= 608)	2014 (n=592)	2011 (n=496)	2014 (n=467)	2011 (n=492)	2014 (n=481)	2011 (n=508)	2014 (n=493)	2011 (n=349)	2014 (n=338)	2011 (n=2,459)	2014 (n=2,377)
Dietary quality score <sup>#</sup>	6.4 (6.3;6.5)	6.4 (6.3;6.6)	6.4 (6.2;6.6)	6.6 (6.4;6.7)	5.9 (5.7;6.0)	5.9 (5.8;6.1)	6.5 (6.4;6.7)	6.4 (6.2;6.5)	6.8 (6.6;7.0)	6.8 (6.7;7.0)	6.3 (6.2;6.4)	6.4 (6.3;6.4)
High intake of sugar-rich foods <sup>*</sup> (%)	26.7 (23.2;30.2)	22.1 <sup>-</sup> (18.8;25.4)	32.0 (27.9;36.0)	26.6 <sup>-</sup> (22.8;30.5)	14.5 (11.4;17.6)	17.0 <sup>-</sup> (13.7;20.3)	32.6 (28.6;36.6)	29.2 (25.3;33.2)	14.2 (10.5;17.8)	9.9 (6.8;13.1)	21.0 (19.4;22.6)	18.8 <sup>*</sup> (17.3;0.4)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	18.4 (15.4;21.5)	13.6 <sup>*</sup> (10.8;16.3)	38.7 (34.3;43.0)	32.0 <sup>-</sup> (27.9;36.1)	40.9 (36.6;45.3)	42.5 (38.2;46.9)	31.9 (27.8;36.0)	37.7 <sup>-</sup> (33.5;41.9)	37.7 (32.6;42.8)	41.6 (36.5;46.8)	34.4 (32.5;36.3)	33.7 (31.9;35.6)
Fruits & vegetables "5+ a day" (%)	18.1 (15.1;21.2)	18.2 (15.1;21.3)	13.1 (10.1;16.1)	12.8 (9.8;15.7)	16.6 (13.3;19.9)	15.1 (11.9;18.2)	14.7 (11.7;17.7)	13.0 (10.1;15.9)	10.2 (7.1;13.4)	13.5 (10.0;17.1)	14.9 (13.5;16.3)	15.0 (13.5;16.4)
Fish (main course twice/week) (%)	9.2 (6.9;11.5)	14.1 <sup>**</sup> (11.3;16.9)	36.0 (31.8;40.2)	43.3 <sup>*</sup> (39.0;47.7)	39.4 (35.1;43.7)	45.8 <sup>*</sup> (41.4;50.1)	82.7 (79.4;85.9)	86.4 <sup>-</sup> (83.5;89.4)	44.4 (39.3;49.6)	59.0 <sup>***</sup> (53.9;64.1)	33.4 (39.1;43.0)	41.5 <sup>***</sup> (39.6;43.5)
Whole grain bread (≥ 50% of daily bread intake) (%)	95.8 (94.2;97.4)	95.8 (94.2;97.4)	95.5 (93.6;97.3)	92.5 <sup>-</sup> (90.2;94.9)	76.4 (72.7;80.2)	76.9 (73.1;80.7)	98.1 (97.0;99.3)	97.9 (96.6;99.2)	97.6 (96.0;99.2)	92.3 <sup>**</sup> (89.5;95.1)	89.6 (88.4;90.8)	87.8 (86.5;89.1)
Unhealthy diet <sup>‡</sup> (%)	11.9 (9.3;14.4)	12.6 (9.9;15.3)	18.0 (14.7;21.4)	12.8 <sup>*</sup> (9.7;15.8)	19.7 (16.2;23.2)	22.2 (18.4;25.9)	11.8 (9.0;14.6)	11.1 (8.3;13.9)	10.1 (6.9;13.2)	10.1 (6.9;13.3)	15.4 (14.0;16.9)	15.6 (14.1;17.0)

Note: <sup>-</sup>p<0.10, <sup>\*</sup>p<0.05, <sup>\*\*</sup>p<0.01, <sup>\*\*\*</sup>p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages.

<sup>\*</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>‡</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

**Table 27: Mean (95% CI) intake of selected foods among children in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region@	
	2011 (n= 608)	2014 (n=592)	2011 (n=496)	2014 (n=467)	2011 (n=492)	2014 (n=481)	2011 (n=508)	2014 (n=493)	2011 (n=349)	2014 (n=338)	2011 (n=2,459)	2014 (n=2,377)
Fruits & vegetables# (freq./day)	3.1 (3.0;3.2)	3.1 (3.0;3.2)	2.6 (2.5;2.7)	2.8* (2.6;2.9)	2.8 (2.7;3.0)	3.0* (2.9;3.1)	2.6 (2.5;2.7)	2.6 (2.5;2.7)	2.5 (2.3;2.7)	2.5 (2.3;2.6)	2.8 (2.7;2.8)	2.9* (2.8;2.9)
Fruits# (freq./day)	1.7 (1.6;1.8)	1.6 <sup>~</sup> (1.5;1.7)	1.1 (1.1;1.2)	1.2 (1.1;1.3)	1.4 (1.4;1.5)	1.5 (1.4;1.6)	1.4 (1.3;1.5)	1.4 (1.3;1.5)	1.2 (1.1;1.3)	1.3* (1.2;1.4)	1.4 (1.3;1.4)	1.4 (1.4;1.5)
Vegetables (freq./day)	1.4 (1.3;1.5)	1.5* (1.4;1.6)	1.4 (1.4;1.5)	1.6* (1.5;1.7)	1.4 (1.3;1.5)	1.5** (1.5;1.6)	1.2 (1.1;1.3)	1.2 (1.1;1.2)	1.3 (1.2;1.4)	1.1** (1.0;1.2)	1.4 (1.4;1.4)	1.5** (1.4;1.5)
Fish (freq./week)	0.8 (0.7;0.8)	1.0* (0.8;1.1)	1.3 (1.2;1.4)	1.4* (1.4;1.5)	1.4 (1.3;1.5)	1.5 <sup>~</sup> (1.4;1.6)	2.4 (2.3;2.4)	2.6* (2.4;2.8)	1.7 (1.4;1.9)	1.7 (1.6;1.9)	1.3 (1.3;1.4)	1.4*** (1.4;1.5)
Whole grain bread* (slices/day)	3.6 (3.5;3.8)	3.5 (3.4;3.7)	3.9 (3.7;4.1)	3.7 <sup>~</sup> (3.5;3.9)	1.9 (1.7;2.0)	1.9 (1.7;2.0)	2.2 (2.1;2.3)	1.9*** (1.8;2.0)	4.8 (4.5;5.1)	4.3** (4.0;4.6)	3.3 (3.2;3.4)	3.1** (3.0;3.2)

Note: <sup>~</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests.

@Weighted according to population size in the five Nordic countries.

#Excluding fruit juice.

\*Whole grain bread is defined as wholemeal bread, rye bread and hard bread.

### 5.2.6 Gender

The proportion with an unhealthy diet was higher in boys than in girls in the Nordic region (17.5% vs. 13.7%). This gender difference was also found in Sweden and Norway.

The intake of fruits and vegetables was higher in girls than in boys in the Nordic region. This gender difference was also seen in Sweden, Iceland and Norway while the opposite was seen in Finland. The intake of whole grain bread was higher in boys than in girls in the Nordic region and in Norway.

Between 2011 and 2014, it was not possible to detect any difference in the proportion with an unhealthy diet in boys and girls in the Nordic region or in each of the five Nordic countries, apart from a decrease in boys in Finland (Table 28 and 30). Although not significant, an upward trend in the proportion with an unhealthy diet was found in girls in Denmark, Finland and Sweden.

Few significant changes were found between 2011 and 2014 when analysing diet according to gender in the Nordic region. Among boys in the Nordic region, the intake of fruits and vegetables increased from 2011 to 2014. Among girls, the intake of fish increased while the intake of whole grain bread decreased.

The proportion with a high intake of saturated fat decreased among boys in Denmark and Finland while the intake of fruits and vegetables increased among boys in Finland and Sweden. The proportion with a high intake of saturated fat and a high consumption of sugar-rich foods decreased among girls in Norway. The intake of whole grain bread decreased among boys in Iceland and among girls in Denmark and Iceland.

**Table 28: Mean and proportion (95% CI) for estimates of dietary intake among boys in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=318)	2014 (n=293)	2011 (n=246)	2014 (n=225)	2011 (n=269)	2014 (n=244)	2011 (n=240)	2014 (n=249)	2011 (n=166)	2014 (n=164)	2011 (n=1,239)	2014 (n=1,179)
Dietary quality score <sup>#</sup>	6.3 (6.1;6.5)	6.6* (6.4;6.8)	6.2 (6.0;6.5)	6.6* (6.4;6.9)	5.7 (5.5;5.9)	5.7 (5.5;5.9)	6.6 (6.4;6.8)	6.3 <sup>-</sup> (6.1;6.5)	6.7 (6.5;7.0)	6.5 (6.2;6.8)	6.1 (6.0;6.2)	6.2 (6.1;6.3)
High intake of sugar-rich foods <sup>*</sup> (%)	27.1 (22.2;32.0)	21.0 (16.4;25.7)	33.6 (27.7;39.5)	29.8 (24.0;35.5)	17.0 (12.5;21.4)	20.5 (15.6;25.4)	35.6 (29.7;41.6)	32.5 (26.7;38.2)	12.4 (7.4;17.3)	10.4 (5.8;14.9)	21.9 (19.6;24.2)	20.6 <sup>-</sup> (18.3;22.8)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	16.3 (12.2;20.3)	11.0* (7.4;14.6)	42.1 (35.8;48.4)	28.6** (22.8;34.4)	44.4 (38.5;50.3)	43.8 (37.8;49.9)	32.7 (26.8;38.7)	38.9 (32.9;44.9)	37.5 (30.1;44.9)	47.5 (40.1;55.0)	35.8 (33.1;38.4)	34.3 (31.6;37.0)
Fruits & vegetables <sup>”</sup> 5+ a day <sup>”</sup> (%)	12.9 (9.2;16.6)	18.9* (14.5;23.4)	12.4 (8.3;16.5)	14.6 (10.1;19.0)	10.5 (6.9;14.2)	12.6 (8.5;16.6)	14.3 (10.0;18.7)	10.2 (6.5;13.9)	7.1 (3.3;11.0)	5.5 (2.1;8.9)	10.8 (9.1;12.5)	12.9 (11.0;14.8)
Fish (main course twice/week) (%)	8.7 (5.6;11.8)	16.5** (12.3;20.8)	33.8 (27.9;39.7)	44.7* (38.4;50.9)	36.3 (30.5;42.0)	41.5 (35.5;47.6)	83.8 (79.2;88.4)	86.5 (82.4;90.7)	42.8 (35.4;50.3)	56.6* (49.2;64.1)	31.2 (28.7;33.8)	40.3*** (37.5;43.0)
Whole grain bread (≥ 50% of daily bread intake) (%)	94.9 (92.4;97.3)	94.0 (91.3;96.7)	94.1 (91.1;97.0)	90.4 (86.6;94.3)	73.6 (68.3;78.9)	77.9 (72.6;83.3)	98.6 (97.2;100)	97.9 (96.1;99.7)	97.3 (94.9;99.8)	86.5*** (81.3;91.7)	87.6 (85.5;89.4)	86.1 (84.1;88.1)
Unhealthy diet <sup>”</sup> (%)	12.3 (8.7;15.9)	11.1 (7.5;14.7)	22.5 (17.3;27.8)	10.6*** (6.5;14.6)	23.5 (18.5;28.6)	27.3 (21.7;32.9)	9.4 (5.7;13.1)	10.4 (6.6;14.2)	9.7 (5.2;14.3)	13.8 (8.5;19.1)	17.8 (15.7;19.9)	17.5 (15.3;19.7)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages 2012).

<sup>\*</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>”</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

Table 29: Mean (95% CI) intake of selected foods among boys in the Nordic countries. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region@	
	2011 (n=318)	2014 (n=293)	2011 (n=246)	2014 (n=225)	2011 (n=269)	2014 (n=244)	2011 (n=240)	2014 (n=249)	2011 (n=166)	2014 (n=164)	2011 (n=1,239)	2014 (n=1,179)
Fruits & vegetables# (freq./day)	2.8 (2.7;3.0)	3.0 (2.9;3.2)	2.4 (2.2;2.6)	2.8** (2.6;3.0)	2.6 (2.4;2.8)	2.9* (2.7;3.0)	2.5 (2.4;2.7)	2.5 (2.3;2.6)	2.4 (2.2;2.6)	2.2 (2.0;2.4)	2.6 (2.5;2.7)	2.8** (2.7;2.8)
Fruits# (freq./day)	1.5 (1.4;1.6)	1.5 (1.4;1.6)	1.0 (0.9;1.1)	1.2 <sup>-</sup> (1.1;1.3)	1.3 (1.2;1.4)	1.4 (1.3;1.5)	1.4 (1.3;1.5)	1.4 (1.3;1.5)	1.2 (1.1;1.3)	1.2 (1.1;1.3)	1.3 (1.2;1.3)	1.3 (1.3;1.4)
Vegetables (freq./day)	1.3 (1.2;1.4)	1.6*** (1.5;1.7)	1.4 (1.3;1.5)	1.6** (1.5;1.8)	1.3 (1.2;1.4)	1.5* (1.4;1.6)	1.2 (1.1;1.3)	1.1 (1.0;1.2)	1.2 (1.1;1.3)	1.0* (0.9;1.1)	1.3 (1.3;1.3)	1.4*** (1.4;1.5)
Fish (freq./week)	0.8 (0.6;0.9)	1.0 <sup>-</sup> (0.8;1.2)	1.3 (1.2;1.4)	1.5 <sup>-</sup> (1.4;1.6)	1.3 (1.3;1.4)	1.4 (1.3;1.5)	2.4 (2.3;2.5)	2.6 (2.4;2.9)	1.6 (1.2;2.0)	1.8 (1.5;2.0)	1.3 (1.2;1.3)	1.4 (1.3;1.4)
Whole grain bread* (slices/day)	3.6 (3.4;3.8)	3.7 (3.5;3.9)	4.1 (3.8;4.4)	3.8 (3.5;4.1)	2.1 (1.8;2.3)	2.0 (1.8;2.2)	2.4 (2.2;2.5)	2.0** (1.9;2.2)	5.2 (4.8;5.6)	4.7 <sup>-</sup> (4.2;5.1)	3.4 (3.3;3.6)	3.3 (3.1;3.4)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests.

@Weighted according to population size in the five Nordic countries.

#Excluding fruit juice.

\*Whole grain bread is defined as wholemeal bread, rye bread and hard bread.



**Table 30: Mean and proportion (95% CI) forestimates of dietary intake among *girls* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=290)	2014 (n=299)	2011 (n=250)	2014 (n=243)	2011 (n=223)	2014 (n=237)	2011 (n=268)	2014 (n=244)	2011 (n=183)	2014 (n=174)	2011 (n=1,216)	2014 (n=1,198)
Dietary quality score <sup>#</sup>	6.5 (6.3;6.7)	6.3 (6.1;6.4)	6.6 (6.4;6.8)	6.5 (6.3;6.7)	6.1 (5.9;6.3)	6.1 (5.9;6.4)	6.5 (6.3;6.7)	6.4 (6.2;6.7)	6.8 (6.6;7.1)	7.1 <sup>-</sup> (6.9;7.4)	6.5 (6.4;6.6)	6.5 (6.4;6.5)
High intake of sugar-rich foods <sup>†</sup> (%)	26.2 (21.2;31.3)	23.2 (18.5;28.0)	30.0 (24.4;35.7)	23.6 (18.5;28.8)	12.1 (7.8;16.3)	13.4 (9.1;17.7)	29.3 (23.9;34.8)	26.0 (20.6;31.3)	15.9 (10.7;21.2)	9.5 <sup>*</sup> (5.2;13.8)	20.2 (17.9;22.5)	17.1 <sup>-</sup> (15.0;19.2)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	20.7 (16.1;25.4)	16.2 (12.0;20.3)	34.7 (28.7;40.7)	35.2 (29.3;41.0)	37.4 (31.1;43.8)	41.2 (35.0;47.4)	31.0 (25.5;36.6)	36.5 (30.5;42.4)	38.0 (30.9;45.0)	35.9 <sup>*</sup> (28.9;42.9)	33.0 (30.4;35.7)	33.2 (30.5;35.8)
Fruits & vegetables "5+ a day" (%)	23.6 (18.7;28.5)	17.3 <sup>-</sup> (13.1;21.6)	13.9 (9.7;18.2)	11.0 (7.2;14.9)	22.8 (17.3;28.2)	17.7 (12.9;22.6)	15.1 (10.8;19.4)	15.8 (11.3;20.2)	13.3 (8.4;18.2)	21.2 <sup>*</sup> (15.3;27.1)	18.8 (16.6;21.0)	17.0 (14.9;19.1)
Fish (main course twice/week) (%)	9.7 (6.3;13.1)	11.6 (8.0;15.2)	38.4 (32.5;44.4)	42.1 (36.0;48.1)	42.6 (36.2;49.0)	50.2 (43.9;56.5)	81.5 (76.8;86.1)	86.3 (82.1;90.5)	46.0 (38.8;53.2)	61.2 <sup>**</sup> (54.2;68.3)	35.7 (33.0;38.4)	42.7 <sup>***</sup> (40.0;45.5)
Whole grain bread (≥ 50% of daily bread intake) (%)	96.8 (94.8;98.8)	97.6 (95.9;99.3)	97.1 (95.0;99.2)	94.5 (91.6;97.3)	79.3 (73.9;84.6)	76.0 (70.5;81.4)	97.6 (95.8;99.4)	97.9 (96.1;99.7)	97.8 (95.7;99.9)	98.0 (95.9;100)	91.5 (90.0;93.1)	89.5 (87.8;91.3)
Unhealthy diet <sup>§</sup> (%)	11.5 (7.8;15.1)	14.2 (10.3;18.2)	12.9 (8.8;17.0)	14.8 (10.3;19.3)	15.9 (11.1;20.7)	17.0 (12.2;21.7)	14.3 (10.1;18.5)	11.8 (7.8;19.9)	10.3 (5.9;15.9)	6.5 (2.9;10.2)	13.0 (11.1;14.9)	13.7 (11.7;15.6)

Note: <sup>-</sup>p<0.10, <sup>\*</sup>p<0.05, <sup>\*\*</sup>p<0.01, <sup>\*\*\*</sup>p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages.

<sup>†</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>§</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

Table 31: Mean (95% CI) intake of selected foods among *girls* in the Nordic countries. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=290)	2014 (n=299)	2011 (n=250)	2014 (n=243)	2011 (n=223)	2014 (n=237)	2011 (n=268)	2014 (n=244)	2011 (n=183)	2014 (n=174)	2011 (n=1,216)	2014 (n=1,198)
Fruits & vegetables <sup>#</sup> (freq./d)	3.4 (3.2;3.5)	3.2 (3.0;3.3)	2.8 (2.6;3.0)	2.7 (2.6;2.9)	3.1 (2.9;3.3)	3.2 (3.0;3.4)	2.7 (2.5;2.9)	2.8 (2.6;2.9)	2.6 (2.4;2.9)	2.7 (2.5;2.9)	3.0 (2.9;3.1)	3.0 (2.9;3.1)
Fruits <sup>#</sup> (freq./d)	1.9 (1.7;2.0)	1.7 (1.6;1.8)	1.3 (1.2;1.4)	1.2 <sup>~</sup> (1.1;1.3)	1.6 (1.5;1.7)	1.6 (1.5;1.7)	1.4 (1.3;1.5)	1.5 (1.4;1.6)	1.2 (1.0;1.3)	1.5 <sup>**</sup> (1.3;1.6)	1.5 (1.4;1.5)	1.5 (1.5;1.6)
Vegetables (freq./d)	1.5 (1.4;1.6)	1.5 (1.4;1.6)	1.5 (1.4;1.7)	1.5 (1.4;1.6)	1.5 (1.4;1.6)	1.6 <sup>~</sup> (1.5;1.7)	1.3 (1.2;1.4)	1.3 (1.2;1.4)	1.4 (1.3;1.6)	1.3 <sup>~</sup> (1.2;1.4)	1.5 (1.4;1.5)	1.5 (1.4;1.5)
Fish (freq./week)	0.8 (0.6;0.9)	1.0 (0.7;1.2)	1.4 (1.2;1.5)	1.4 (1.3;1.5)	1.5 (1.3;1.6)	1.6 <sup>~</sup> (1.5;1.8)	2.3 (2.2;2.4)	2.6 (2.3;2.8)	1.8 (1.5;2.0)	1.7 (1.6;1.9)	1.4 (1.3;1.4)	1.5 <sup>*</sup> (1.4;1.6)
Whole grain bread <sup>*</sup> (slices/d)	3.6 (3.4;3.8)	3.3 <sup>*</sup> (3.1;3.5)	3.7 (3.5;4.0)	3.6 (3.3;3.8)	1.7 (1.5;1.9)	1.8 (1.6;1.9)	2.1 (1.9;2.3)	1.8 <sup>*</sup> (1.7;2.0)	4.4 (4.1;4.7)	4.0 (3.7;4.3)	3.2 (3.0;3.3)	2.9 <sup>**</sup> (2.8;3.0)

Note: <sup>~</sup>p<0.10, <sup>\*</sup>p<0.05, <sup>\*\*</sup>p<0.01. Differences between survey years 2011 and 2014 using t-tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Excluding fruit juice.

<sup>\*</sup>Whole grain bread is defined as wholemeal bread, rye bread and hard bread.

### 5.2.7 Parental education

In 2014, the proportion with an unhealthy diet was higher in children with a low or medium educated parent than in children with a high educated parent in the Nordic region (Table 32).

**Table 32: Mean and proportion (95% CI) for estimates of dietary intake among children according to parental education in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=177)	2014 (n=140)	2011 (n=942)	2014 (n=600)	2011 (n=1,336)	2014 (n=1,630)
Dietary quality score <sup>#</sup>	6.2 (6.0;6.4)	5.8* (5.5;6.1)	6.2 (6.1;6.3)	6.1 (6.0;6.3)	6.4 (6.3;6.5)	6.6** (6.5;6.7)
High intake of sugar-rich foods <sup>‡</sup> (%)	27.7 (18.8;36.5)	24.9* (16.2;33.7)	22.3 (19.8;24.9)	20.3 (17.2;23.4)	19.6 (17.5;21.8)	16.9* (15.2;18.7)
High intake of foods rich in sat. fat <sup>‡</sup> (%)	26.1 (17.3;35.0)	31.6 (22.2;41.0)	37.0 (34.0;40.0)	35.5 (31.7;39.2)	32.7 (30.2;35.2)	34.3 (32.1;36.6)
Fruits & vegetables "5+ a day" (%)	15.0 (8.0;22.1)	11.0 (4.5;17.4)	13.3 (11.2;15.4)	12.3 (9.8;14.8)	15.3 (13.4;17.2)	16.8 (15.0;18.5)
Fish (main course twice/week) (%)	28.0 (19.1;36.9)	30.5 (21.2;39.8)	30.5 (27.5;33.1)	37.3*** (33.8;41.3)	37.5 (34.9;40.0)	45.3*** (42.9;47.7)
Whole grain bread (≥ 50% of daily bread intake) (%)	92.9 (87.8;98.0)	84.9 (77.3;92.5)	88.1 (86.1;90.1)	89.8 (87.4;92.2)	89.7 (88.1;91.3)	88.3 (86.7;89.8)
Unhealthy diet <sup>‡</sup> (%)	12.2 (5.7;18.8)	24.4* (15.4;33.4)	18.9 (16.5;21.3)	19.3 (16.2;22.5)	13.6 (11.7;15.4)	10.6* (9.1;12.0)
Relative difference unhealthy diet <sup>‡</sup> (%)	–	–	–	–	10	–133

Note: \*p<0.05, \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Overall dietary quality score between 0 and 12 points based on intakes of fruits and vegetables, whole grain bread, fish as a main course, sugar-rich foods (chocolate/candy, cakes, soft drinks), pommes frites, type of fat used on bread, full fat cheese and sausages.

<sup>‡</sup>Based on intakes of chocolate/candy, cakes and soft drinks.

<sup>‡</sup>Based on intake of full fat cheese and type of fat used on bread and for cooking.

<sup>‡</sup>An unhealthy diet is defined as a dietary quality score between 0 and 4 points.

<sup>‡</sup>Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

**Table 33: Mean (95% CI) intake of selected foods among children according to parental education in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=177)	2014 (n=140)	2011 (n=942)	2014 (n=600)	2011 (n=1,336)	2014 (n=1,630)
Fruits & vegetables <sup>#</sup> (freq./d)	2.6 (2.4;2.8)	2.7 (2.4;2.9)	2.7 (2.6;2.8)	2.7 (2.6;2.8)	2.9 (2.8;3.0)	3.1*** (3.0;3.1)
Fruits <sup>#</sup> (freq./d)	1.4 (1.3;1.6)	1.4 (1.3;1.6)	1.4 (1.3;1.4)	1.3 (1.3;1.4)	1.4 (1.3;1.4)	1.5** (1.4;1.5)
Vegetables (freq./d)	1.2 (1.1;1.3)	1.2 (1.1;1.4)	1.3 (1.3;1.4)	1.4 (1.3;1.4)	1.5 (1.4;1.5)	1.6** (1.5;1.6)
Fish (freq./week)	1.2 (1.0;1.4)	1.1 (1.0;1.3)	1.3 (1.2;1.4)	1.4 (1.3;1.5)	1.4 (1.3;1.4)	1.5*** (1.5;1.6)
Whole grain bread <sup>*</sup> (slices/d)	3.8 (3.4;4.1)	2.5*** (2.2;2.8)	3.3 (3.1;3.5)	3.2 (;3.3)	3.2 (3.1;3.3)	3.2 (3.1;3.3)

Note: \*\*p<0.01, \*\*\*p<0.001. Differences between survey years 2011 and 2014 using t-tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Excluding fruit juice.

<sup>\*</sup>Whole grain bread is defined as wholemeal bread, rye bread and hard bread.

The proportion with an unhealthy diet was more than two times higher in children with a low educated parent than in children with a high educated parent suggesting a large inverse social gradient.

Social difference is only reported in the Nordic region because it was not possible to assess social inequality in diet in all the Nordic countries due to few participants in the group of children with a low educated parent. A large social difference in diet (unhealthy diet) was found in the Nordic region. The proportion with an unhealthy diet was higher in children with a low or medium educated parent than in children with a high educated parent in Denmark, Sweden and Iceland. No differences were seen between the three education groups in Finland and Norway.

Only few significant results were seen when analysing the development from 2011 to 2014 in dietary intake according to parental education in the Nordic region. The proportion with an unhealthy diet doubled in children with a low educated parent while a decrease was found in children with a high educated parent (Table 32).

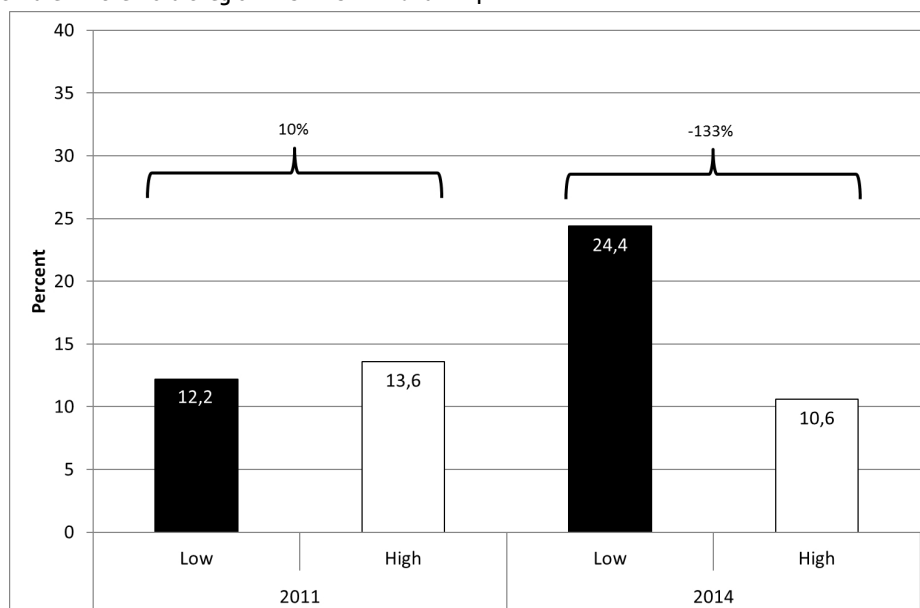
In the Nordic region, the proportion with a high consumption of sugar-rich foods decreased from 2011 to 2014 in children with a low or high educated parent (Table 32).

Intake of fruits and vegetables and fish increased in children with a high educated parent. Further, intake of whole grain bread decreased in children with a low educated parent. (Table 33). These findings suggest that the development from 2011 to 2014 in dietary intake has mostly been favorable in children with a high educated parent.

Intake of fruits and vegetables increased in children with a medium educated parent in Finland and Iceland, but otherwise mixed results were found in the five Nordic countries.

The social difference in diet increased considerably in the Nordic region between 2011 and 2014 (Figure 4). The increasing social difference was mainly caused by an increase in the proportion with an unhealthy diet in children with a low educated parent.

Figure 4: The development from 2011 to 2014 in the social difference in diet (unhealthy diet) among children in the Nordic region. NORMO 2011 and 2014



## 5.3 Discussion

### 5.3.1 Adults

Results show an increase in the proportion with an unhealthy diet in the Nordic region from 18.2% in 2011 to 21.5% in 2014. Hence, data indicate that the overall diet has developed unfavorably among adults in the Nordic countries. The increase during the

three year period is worrying from a public health perspective because it corresponds to more than 500,000 additional adults with an unhealthy diet in the Nordic region (from 3.0 million with an unhealthy diet in 2011 to 3.5 million in 2014). The proportion with an unhealthy diet increased in Sweden, Iceland and Norway.

The proportion with an unhealthy diet increased in both genders, in 25–44- and 45–65-y-olds and among the low and high educated in the Nordic region. However, an encouraging decrease in the proportion with an unhealthy diet was found in 18–24-y-olds in the Nordic region.

The development in the overall diet quality seems to be heading in an unfavorably direction among adults in the Nordic region even though a decrease in the proportion with a high consumption of sugar-rich foods has occurred and must be considered an improvement.

The most favorable development was seen in Finland because the proportion with an unhealthy diet has come to a halt at a relatively low level. In contrast to Finland, the most unfavorable development was observed in Sweden and Iceland because of a 4–5 percentages point increase in the proportion with an unhealthy diet.

### **5.3.2**      *Comparison with other national estimates from the Nordic countries among adults*

Table 34 shows the recent development according to other national estimates based on data from dietary and health surveys. The proportion fulfilling dietary guidelines regarding fruits and vegetables, fish, whole grain bread/cereals, total fat, saturated fat and added sugar among adults in each of the five Nordic countries are shown. However, some differences in dietary assessment methods, survey periods, participation rates, sample size, age groups and definitions used imply that these estimates are not directly comparable with NORMO data, but still relevant to compare with. Other national estimates cover the time period from 2002 up to 2013. This time period was selected because Vision 2021 in the Nordic Plan of Action was defined by the use of the proportion fulfilling selected food based dietary guidelines at year 2006 where the Nordic Plan of Action was launched. Only Denmark, Finland and Iceland have data for two time periods and therefore the comparison of changes over time is limited to these countries.

**Table 34: Population levels and the development in meeting food based dietary guidelines and the Nordic Nutrition Recommendations *among adults* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden	Iceland		Norway
	2005–2008	2011–2013	2007–2008	2012	2010–2011	2002	2010–2011	2010–2011
	18–65 y		25–74 y		18–65 y	18–80 y		18–70 y
"5+ a day" <sup>a</sup> (%)	18.5	18.2	41.5	33.5	12.1 <sup>a</sup>	N/A	11.4	23.6
Fish twice a week (%)	2.7	13.4 <sup>b</sup>	44.4	64.0	30.0 <sup>b</sup>	N/A	40–50 <sup>#</sup>	36.6
Whole grain bread/cereals (%)	40.0	55.6	89.1	77.5	N/A	N/A	21.3	46.8
Total fat 25–40 E% (%)	77.9	66.5	86.3	83.3	78.6	N/A	64.3	70.5
Saturated fat (E%)	14.6	15.0	12.6	14.5	13.2	14.8	14.5	13.0
< 10 E% added sugar (%)	64.3	67.1	55.7	69.2	73.0 <sup>c</sup>	N/A	63.6	76.2

Note: N/A: Not available.

<sup>a</sup>Fruits and vegetables ( $\geq 500$  g/day).

<sup>b</sup>Fish as a main course ( $\geq 350$  g/week).

<sup>#</sup>50% eats fish twice a week and 40% eats  $\geq 350$  g fish/week <sup>c</sup>Total sucrose.

Comparison between other national estimates and NORMO data show some similarities, but also some differences. Differences may to a large extent be explained by different sources of data as NORMO data do not cover exactly the same foods/macronutrients as in the other national dietary surveys. For instance, other national estimates cover the proportion eating all kinds of whole grain whereas NORMO only covers the bread intake. Also, NORMO measures slices of bread and this might not be directly comparable to the amounts of total whole grain eaten. Finally, other national estimates might use different definitions of which food to include in the selected dietary variables, thus making it difficult to compare with NORMO data.

Other national estimates for selected foods and macronutrients were only available for Denmark and Finland to describe the development over time (Table 34). Other national estimates for the intake of saturated fat were also available for Iceland.

Other national estimates show no change in the intake of fruits and vegetables among adults in Denmark and a decrease in Finland, while NORMO data also showed no change in Denmark, but an increase in Finland. Other national estimates for Denmark and Finland show an increase in the intake of fish, while NORMO data show a slightly decrease in Denmark and no change in Finland. Finally, other national estimates for whole grain bread/cereals show an increase in Denmark and a decrease in Finland, while NORMO data show a decrease. The development according to other national estimates is therefore only partly in agreement with NORMO data. The most recent survey period for other national estimates of whole grain are 2011–2013 in Denmark and 2012 in Finland. Since the low carb trend has become highly prominent in the Nordic region during recent years, NORMO data might cover the low carb development better

than other national estimates. It has not been possible to compare all other national estimates with NORMO data.

However, other national estimates are useful in providing data on the intake of macronutrients like saturated fat and added sugar as these nutrients are not possible to estimate in NORMO. Other national estimates for Denmark and Finland show an increase in the intake of saturated fat and an increase in the proportion with an intake of added sugar below the recommended level while other national estimates for Iceland show no change in the intake of saturated fat. Results from NORMO are in line with other national estimates from Denmark and Finland as an increase in the proportion with a high consumption of foods rich in saturated fat as well as a decrease in the proportion with a high consumption of sugar-rich foods was seen. However, other national estimates from Iceland for the intake of saturated fat are not in accordance with results from NORMO as NORMO data showed an increase in the proportion with a high consumption of foods rich in saturated fat.

The difficulties in obtaining comparable national estimates on foods highlight the importance of collecting data in the Nordic countries in the same period and age groups and using the same assessment method as has been done in NORMO.

In summary, few other national estimates were available to compare with NORMO data. Comparisons between other national estimates and NORMO data show only in part the same development. Also the population levels for diet and nutrients in the Nordic countries differ between other national estimates and NORMO. The discrepancies are probably due to differences in the representativeness of the samples, survey years, assessment methods and definitions of food groups and macronutrients used.

### **5.3.3      *Evaluation of Goal 2011 and Vision 2021 in the Nordic Plan of Action among adults***

In the Nordic Plan of Action Goals 2011 and Visions 2012 for selected food groups are stated, but not for the overall dietary quality. Goals 2011 in the Nordic Plan of Action was to increase the consumption of fruits and vegetables, fish and whole grain bread/cereals and to decrease the consumption of saturated fat, trans fatty acids and added sugar in the Nordic countries (Appendix C).

The proportion with an unhealthy diet increased among adults in Nordic region and in Sweden, Iceland and Norway while no change was detected in Denmark and Finland. These findings indicate that dietary behaviour is developing unfavorably among adults in the Nordic region. A decrease in the proportion with a high consumption of sugar-rich foods was seen. But also a decrease in the intake of fish and whole grain bread and



an increase in the proportion with a high consumption of foods rich in saturated fat were found. These unfavorable changes were especially attributed to men.

Visions 2021 in the Nordic Plan of Action are to increase the proportion of the population over 10 years eating "5+ a day" (at least 500 g fruit and vegetables/day) as well as eating fish as a main meal twice a week to at least 70% from the level at year 2006 (Appendix C). Even though these visions may not be evaluated until 2021, one has to be highly optimistic to believe that these visions will be fulfilled taking the current population level and the most recent changes into consideration. In 2014, the proportion eating "5+ a day" (fruit and vegetables) was 13% in the Nordic region. Thus, the current proportion eating "5+ a day" should increase fivefold in a seven year period to reach the target level in Vision 2021 ( $\geq 70\%$ ).

In 2014, the proportion eating fish twice a week was 42% in the Nordic region and the current proportion should increase with approximately 60% in a seven year period to reach the target population level in Vision 2021. None of the Nordic countries are close to meet the target level of eating "5+ a day" or fish as main meal twice a week. However, Iceland is closest to fulfilling the vision 2021 for fish as 64% of adults in Iceland already eats fish as a main meal twice a week. Denmark is the country with the longest way to go to fulfill the vision on eating enough fish.

Vision 2021 regarding whole grain is to increase the proportion eating at least half of bread intake as whole grain bread/cereals to at least 70%. NORMO only measures the consumption of bread. The vision is fulfilled in all the Nordic countries and 95% of adults in the Nordic region eat at least half of their daily bread intake as whole grain bread. However, the development from 2011 to 2014 shows a slight downward trend in the proportion eating at least half of their daily bread intake as whole grain bread.

Vision 2021 about fat is that the average dietary intake of saturated plus trans fatty acids should not exceed 10% of energy and at least 70% of the population should meet the Nordic nutrition recommendations on fat (E% from fat between 25 and 40). Vision 2021 regarding added sugar is that 80% or more meets the Nordic nutrition recommendations on added sugar ( $<10$  E%). As NORMO data do not provide data on macronutrients and energy, neither of these visions may be directly evaluated through NORMO data. Other national estimates show an increase in the proportion with a sugar intake below the recommended level and an increase in the saturated fat intake. NORMO data are in line with these findings.

#### 5.3.4 *Social inequality*

The social difference in diet (unhealthy diet) did not change from 2011 to 2014 in the Nordic region, but still a large difference between the low and the high education group was seen.

Goal 2011 looks apparently to be fulfilled among adults in the Nordic region as social inequality has not deepened further. Mixed results were found regarding the social difference in diet in the five Nordic countries. Social inequality in diet decreased in Denmark and Iceland between 2011 and 2014 whereas an increase was found in Sweden. No change was found in Finland and Norway.

Goal 2011 was fulfilled among adults in the Nordic region, however not favorably from a public health point of view because the proportion with an unhealthy diet increased in both the low and high education group. This means that health behaviour has deteriorated in both groups. It is therefore important to improve health behaviour in all social groups when the aim is to lower social inequality in health.

Vision 2021 states that social inequality in diet should decrease and that the social difference in diet should be at most 20%. In 2014, the social difference was 51% in the Nordic region which indicates a highly inverse social gradient in diet among adults in the Nordic region.

The social difference was large in all the Nordic countries, except in Iceland with a moderate difference. Vision 2021 is not fulfilled and data suggest that the vision may be difficult to fulfill taking the current population level and the development into consideration. Vision 2021 also needs to be evaluated with the ambition of achieving better health status in all social groups and not just decrease the social difference in diet.

#### 5.3.5 *Children*

Results show that the proportion with an unhealthy diet did not change among children in the Nordic region between 2011 and 2014. This was observed in all the Nordic countries, except in Finland with a decrease in the proportion with an unhealthy diet. No change in the proportion with an unhealthy diet was also found from 2011 to 2014 in boys and girls in the Nordic region.

Social inequality in diet increased among children in the Nordic region between 2011 and 2014. This was caused by a large discouraging increase in the proportion with an unhealthy diet in children with a low educated parent and a decrease in children with a high educated parent. Thus, large social differences in diet persist among children in the Nordic region.

### 5.3.6 *Comparison with other national estimates from the Nordic countries among children*

Table 35 shows the recent development according to other national estimates based on data from dietary and health surveys. Other national estimates of the proportion fulfilling dietary guidelines regarding fruits and vegetables, fish, whole grain bread/cereals, total fat, saturated fat and added sugar among children in each of the five Nordic countries are shown. Other national estimates are useful in providing data on intake of macronutrients like saturated fat and added sugar as these nutrients are not covered by NORMO. Other national estimates may differ from NORMO data in terms of representativeness, dietary assessment methods, measures of foods,<sup>5</sup> survey periods, participation rates, sample size, age groups and definitions used, but are still useful for comparison.

The comparison between other national estimates and NORMO data show some similarities, but also some differences. Differences are described in the section on adults and may to a large extent be explained by different data sources as NORMO data do not cover exactly the same foods/macronutrients as in the other national dietary surveys.

Other national estimates for dietary intake were only available for children in Denmark, Sweden and Iceland. These estimates indicate a downward trend in the intake of saturated fat and added sugar. These findings are in agreement with the non-significant decrease in the proportion with a high consumption of sugar-rich foods seen in NORMO while the decrease in the intake of saturated fat is not in line with NORMO data, where no change was seen. Other national estimates show an increase in fruit and vegetables and fish among children in Denmark, Sweden and Iceland. These findings are in agreement with the increases in fruits and vegetables and fish seen in NORMO. Too few other national estimates were available for the intake of whole grain bread/cereals to enable comparison between data.

In summary, the recent development for children's dietary intake in some of the Nordic countries according to other national estimates is in agreement with NORMO data. However, the population levels for selected foods and macronutrients in the Nordic countries differ between other national estimates and NORMO data probably due to differences in the representativeness of the sample, survey years, and assessment methods and definitions of food groups and macronutrients used.

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<sup>5</sup> Other national estimates for Finland regarding the intake of fruit and vegetables and fish in children are not comparable with NORMO data because other national estimates only cover fruit and vegetables eaten at schools and fish eaten at least once a week.

**Table 35: Population levels and the development in meeting food based dietary guidelines and the Nordic Nutrition Recommendations *among children* in the Nordic countries according to other national estimates**

	Denmark		Finland	Sweden		Iceland		Norway
	2005–2008	2011–2013	2007–2008	2003	2014	2001	2011	2000
	7–12 y		11 y	11–12 y	11 y	6 y		9 y
"5+ a day" (%)	17.6	19.9	66 <sup>+</sup>	0.8 <sup>*</sup>	1.1 <sup>*</sup>	0	6	2.1
Fish twice a week (%)	0.6	2.6 <sup>\$</sup>	25 <sup>++</sup>	11.4 <sup>\$</sup>	12.1 <sup>\$</sup>	11	13	17
Whole grain bread/cereals (%)	61.0	72.8	40 <sup>+++</sup>	N/A	N/A	N/A	N/A	27.6
Total fat 25–40 E% (%)	88.1	88.8	N/A	89.5	98.7	87.0	87.0	85.1
Saturated fat (E%)	14.0	13.9	N/A	14.2	13.1	14.7	13.3	7.7
< 10 E% added sugar (%)	36.0	49.0	N/A	33.4 <sup>£</sup>	67.0 <sup>£</sup>	26	43	12.7

Note: N/A: Not available.  
<sup>+</sup>Fresh vegetables daily at school lunch.  
<sup>\*</sup>Fruits and vegetables (≥ 500 g/day).  
<sup>++</sup>Fish at least once a week.  
<sup>\$</sup>Fish as a main course (≥ 350 g/week).  
<sup>+++</sup>Dark bread daily.  
<sup>£</sup>Total sucrose.

### 5.3.7 Evaluation of Goal 2011 and Vision 2021 in the Nordic Plan of Action *among children*

The goals and visions for dietary intake are the same for children as for adults (Appendix C).

The proportion with an unhealthy diet did not change in Nordic region and in Denmark, Sweden, Iceland and Norway, but a decrease was seen in Finland. The goal regarding fruits and vegetables has been fulfilled in the Nordic region as the intake of fruit and vegetables increased slightly among children. The goal on an increase in the intake of whole grain bread/cereals has not been fulfilled. The goal of an increase in the intake of fish has been reached in the Nordic region and in Denmark, Finland and Iceland. Iceland was the only Nordic country with an intake of fish above the target population level in Vision 2021. Other dietary indicators did not change or show mixed results.

The visions will not be evaluated until 2021, but it is doubtful that the visions will be fulfilled taking the current population level and the most recent changes into consideration. In 2014, the proportion eating "5+ a day" (fruit and vegetables) was 15% in the Nordic region (Table 26). Thus, the current proportion eating "5+ a day" should increase almost five times in a seven year period to reach the target population level in Vision 2021 (≥ 70%).

In 2014, the proportion eating fish twice a week was 42% in the Nordic region and the current proportion should increase significantly to reach the target population level in Vision 2021 ( $\geq 70\%$ ). Only Iceland meets the target population level of eating fish as 86% of all children eat fish as a main meal twice a week. Denmark is the country with the longest way to go to fulfill the vision on eating enough fish.

Vision 2021 regarding whole grain is fulfilled because 88% of children in the Nordic region eat at least half of their daily bread intake as whole grain bread. Vision 2021 regarding fat and sugar may not be evaluated with NORMO data because NORMO do not provide data on macronutrients and energy intake. Other national estimates show an increase in the proportion fulfilling the recommendations of eating less than 10% of the energy deriving from added sugar. This corresponds well with the finding of a decreased proportion with a high consumption of sugar-rich foods in NORMO between 2011 and 2014.

Other national estimates show an decrease in the percentage of energy deriving from saturated fat. NORMO data show in line with this a small non-significant decrease in the proportion with a high consumption of foods rich in saturated fat.

#### **5.3.8 Social inequality**

The social difference in diet (unhealthy diet) increased from 2011 to 2014 in the Nordic region. While the social difference in diet was small in 2011, it increased to 133% in 2014. This was mainly due to a large increase in the proportion with an unhealthy diet in children with a low educated parent. Thus, results indicate that social inequality in diet is still highly significant among children in the Nordic region. Goal 2011 is therefore not fulfilled as social inequality has deepened.

Vision 2021 states that the social difference in diet should decrease and be at most 20%. The large increase in the social difference in diet suggests that it may be difficult to fulfill Vision 2021. Vision 2021 needs to be evaluated with the ambition of achieving better health status in all social groups and not just decrease the social difference in diet.

It should also be considered to expand the low education group in future reporting of NORMO data because the group of children with a low educated parent was small in 2011 and 2014 (6–7%). Expanding the low education group will make it possible to assess social inequality in diet in all the Nordic countries and not just the Nordic region.

## 6. Physical activity and sedentary behaviour

Physical activity reduces the risk of all-cause mortality and non-communicable diseases such as cardiovascular diseases, obesity, type 2 diabetes and certain type of cancers (Physical Activity Guidelines Advisory Committee 2008, NNR 2012). Physical inactivity has been identified as one of the leading risk factors for major non-communicable diseases and mortality (WHO 2009, Lee *et al.* 2012). Research suggests that sedentary behaviour may also be a risk factor, independent of physical activity, for adverse health outcomes among adults (Thorp *et al.* 2011, Stamatakis *et al.* 2011, Dunstan *et al.* 2012). Too much sitting is related to cardiovascular disease risk, type 2 diabetes, weight gain and premature mortality.

The population levels and the development from 2011 to 2014 of physical activity and sedentary behaviour in the Nordic countries are presented in this chapter. Time spent on moderate and vigorous intensity physical activity (MVPA) during leisure-time was used to report data on physical activity and time spent on recreational TV time and computer time (sedentary recreational screen time) was used to report data on sedentary behaviour.<sup>6</sup> Physically inactive is defined as a failure to meet the physical activity recommendations.

The proportions of inactive and with high recreational screen time have been chosen as key variables for physical activity and sedentary behaviour, respectively. The main focus in the Nordic Plan of Action is on physical inactivity (Nordic Council of Ministers, 2006). Classifications of physical activity as inactive, highly inactive (subgroup of inactive), active and highly active (subgroup of active) are shown in Table 5 in the Methods section. Results on the proportion of physically active is tabulated, but will not be commented as physical inactivity and physical activity are two sides of the same coin in this chapter. However, the population levels and the development in subgroups of inactive and active, i.e. the proportions of highly inactive and highly active, will be commented on in the Results and Discussion section. High recreational screen time was defined as more than four hours per day of sedentary TV and/or computer time during leisure.

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<sup>6</sup> *Sedentary recreational screen time* will be referred as just *recreational screen time* to keep the terms short.

Data on the population levels and the development of physical activity and sedentary behaviour according to age and education in each of the five Nordic countries are commented in this chapter, but data are not tabulated and only significant findings of the development from 2011 to 2014 will be shown in the text.

The development from 2011 to 2014 for the level of physical at work (adults) and during leisure time (adults and children) are shown in Table 102–103 and 105–106 in appendix D, but data will not be commented and were not analysed statistically. These questions have been used in numerous large-scale population surveys in the Nordic countries (Grimby *et al.* 2015), but the reference period in NORMO is last 7 days in contrast to last year in most of the other surveys.

When comparing physical activity and sedentary behaviour between the Nordic countries, only countries where it is possible to identify one or more countries with the highest and/or lowest proportions of inactive and with high recreational screen time will be commented in the key findings below.

## 6.1 Key findings

### 6.1.1 Adults

#### Physical activity

- In 2014, one in three adults were physically inactive in the Nordic region. The proportion of inactive did not differ between genders. The lowest proportion of inactive was found in Finland and Sweden and the highest in Norway.
- In the Nordic region, the proportion of inactive did not change among adults between 2011 and 2014. No change was also found when gender and education were analysed. The proportion of inactive increased only in 18–24-y-olds.
- In the Nordic region, the proportions of highly inactive increased from 10.6% to 12.4% between 2011 and 2014. The proportion of highly inactive increased in women and 18–24-y-olds and among the medium and high educated.
- In the Nordic region, the proportions of highly active increased from 13.2% to 14.4% between 2011 and 2014. The proportion of highly active increased in men and among the high educated.
- In the Nordic region, the social difference in physical activity (inactive) was large in 2014 and did not change between 2011 and 2014.

### Sedentary behaviour

- In 2014, three in ten adults spent more than four hours daily on recreational screen time in the Nordic region. The proportion with high recreational screen time was higher in men than in women (32.7% vs. 27.3%). The lowest proportion with high recreational screen time was observed in Sweden and Iceland.
- In the Nordic region, the proportion with high recreational screen time increased slightly from 28.6% in 2011 to 30.0% in 2014 among all adults, however no significant change was found in men or women. The proportion with high recreational screen time increased in 45–65-y-olds and among the low educated.
- In the Nordic region, the social difference in sedentary behaviour (high recreational screen time) was large in 2014 and increased between 2011 and 2014.

#### 6.1.2 Children

### Physical activity

- In 2014, six in ten children were physically inactive in the Nordic region. The proportion of inactive was higher in girls than in boys (64.2% vs. 54.0%). The lowest proportion of inactive was observed in Finland and the highest in Sweden.
- In the Nordic region, the proportion of inactive did not change among children between 2011 and 2014. No change was also found when gender and (parental) education were analysed.
- In girls, the proportion of highly inactive decreased from 2011 to 2014.
- In the Nordic region, the social difference in physical activity (inactive) was small in 2014 and did not change between 2011 and 2014.

### Sedentary behaviour

- In 2014, more than one in seven children spent more than four hours daily on recreational screen time in the Nordic region. The proportion with high recreational screen time was higher in boys than in girls (18.2% vs. 12.8%). The lowest proportion with high recreational screen time was observed in Iceland.
- In the Nordic region, the proportion with high recreational screen time did not change between 2011 and 2014. No change was also found in boys and when (parental) education was analysed. However, the proportion with high recreational screen time decreased in girls from 2011 to 2014.



- In the Nordic region, the social difference in sedentary behaviour (high recreational screen time) was small in 2014 and decreased considerably between 2011 and 2014.

### 6.1.3 Conclusions

Results indicate that the lifestyle has become more inactive and sedentary among adults in the Nordic region between 2011 and 2014, although an increased polarisation in the physical activity pattern and only a slight change in sedentary behaviour were found. This is however not evident among children in the Nordic region where the level of physical activity and sedentary behaviour did not change. Goal 2011 in the Nordic Plan of Action has therefore been fulfilled among children, but not among adults. The social difference in physical activity (inactive) was still large among adults and still small among children in the Nordic region. Data also indicate that social inequality in physical activity has not deepened further among adults and children.

## 6.2 Results

### 6.2.1 Adults

#### Physical activity

In 2014, adults in the Nordic region spent on average about five hours weekly on moderate and vigorous intensity physical activity (MVPA) during leisure time which is more than the total amount for meeting the minimum physical activity recommendations. One in three adults were classified as physically inactive in the Nordic region. Ranking of the proportions of inactive and with high recreational screen time in the five Nordic countries is shown in Table 36. The proportion of inactive was higher in Norway than in the other Nordic countries and lower in Finland and Sweden than in Denmark and Iceland.

**Table 36: Ranking from lowest to highest proportions of inactive and with high recreational screen time among adults in the five Nordic countries. NORMO 2014**

Country	Inactive (%)	Country	High recreational screen time (> 4 h/day) (%)
Finland	29.1	Sweden	25.1
Sweden	29.7	Iceland	26.2
Denmark	34.3	Norway	31.3
Iceland	35.2	Denmark	33.2
Norway	45.0	Finland	35.1

The development from 2011 to 2014 in physical activity during leisure in the Nordic countries is shown in Table 37. Few changes were found in the Nordic region and in each of the five Nordic countries. There was an increase in the proportion of highly inactive from 2011 to 2014 in the Nordic region while no change was detected in mean MVPA and in the proportion of inactive. When each of the five Nordic countries was analysed, an increase in mean MVPA was found in Denmark, but the proportion of inactive did not change. The proportion of highly inactive increased in Iceland between 2011 and 2014 and a non-significant upward tendency was found in the other Nordic countries. This suggests that the group with almost no weekly MVPA may be rising among adults in the Nordic countries.

Moreover, the proportion of highly active increased in the Nordic region.

### **Sedentary behaviour**

In 2014, adults in the Nordic region spent on average almost four hours daily on sedentary TV and/or computer time during leisure, which is quite high and similar to the cut-off point for high recreational screen time. Three in ten adults spent more than four hours per day on recreational screen time in the Nordic region. The proportion with high recreational screen time (>4 h/d) was lower in Sweden and Iceland than in the other Nordic countries and higher in Finland than in Norway (Table 36).

Mean recreational screen time did not change from 2011 to 2014 when analysing the Nordic region, but as shown in Table 38, mixed results were found in the five Nordic countries. Between 2011 and 2014, the pattern of recreational screen time changed overall because mean TV time decreased and mean computer time increased. This is most likely a sign of smart phones and tablets have become more popular and replaced TV. Mean computer time increased systematically in all the Nordic countries, except in Norway, while changes in mean TV time were mixed in the five Nordic countries.

The proportion with high recreational screen time increased in the Nordic region from 2011 to 2014. An increase in the proportion with high recreational screen time was also found in Denmark, Finland and Iceland whereas a decrease was observed in Norway.

**Table 37: Mean and proportion (95% CI) for estimates of physical activity among adults in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=2,093)	2014 (n=1,900)	2011 (n=1,817)	2014 (n=1,637)	2011 (n=1,772)	2014 (n=1,632)	2011 (n=1,864)	2014 (n=1,916)	2011 (n=1,011)	2014 (n=945)	2011 (n=8,557)	2014 (n=8,030)
MVPA (h/wk)	4.5 (4.3;4.6)	4.8* (4.6;5.0)	5.3 (5.1;5.5)	5.3 (5.1;5.5)	5.0 (4.8;5.2)	5.2 (5.0;5.4)	4.7 (4.5;4.9)	4.8 (4.6;5.0)	4.4 (4.1;4.7)	4.1 (3.8;4.4)	4.8 (4.7;4.9)	4.9 (4.8;5.0)
MPA (h/wk)	3.0 (2.8;3.1)	3.1 (2.9;3.2)	3.3 (3.2;3.5)	3.6 <sup>-</sup> (3.4;3.8)	3.3 (3.1;3.5)	3.1 (2.9;3.3)	2.7 (2.5;2.8)	2.6 (2.5;2.8)	2.7 (2.5;2.9)	2.9 (2.7;3.1)	3.1 (3.0;3.2)	3.2 (3.1;3.2)
VPA (h/wk)	1.5 (1.4;1.6)	1.7*** (1.6;1.8)	1.9 (1.8;2.0)	1.7** (1.6;1.8)	1.8 (1.7;1.9)	2.1*** (1.9;2.2)	2.0 (1.9;2.1)	2.1 (2.0;2.2)	1.6 (1.4;1.7)	1.2*** (1.1;1.3)	1.7 (1.7;1.8)	1.8 (1.7;1.8)
Inactive(%)	34.4 (32.4;36.5)	34.3 (32.1;36.4)	28.2 (26.1;30.2)	29.1 (26.9;31.3)	31.2 (29.0;33.4)	29.7 (27.4;31.9)	34.1 (32.0;36.3)	35.2 (33.0;37.3)	41.2 (38.1;44.3)	45.0 <sup>-</sup> (41.9;48.2)	33.2 (32.2;34.2)	33.6 (32.5;34.6)
Highly inactive# (%)	11.8 (10.4;13.2)	13.4 (11.8;14.9)	7.0 (5.8;8.2)	8.4 (7.0;9.7)	9.3 (7.9;10.6)	10.9 (9.4;12.4)	14.1 (12.5;15.6)	17.4** (15.7;19.1)	15.5 (13.2;17.7)	18.2 (15.7;20.6)	10.6 (10.0;11.3)	12.4*** (11.7;13.1)
Active(%)	65.6 (63.5;67.6)	65.7 (63.6;67.9)	71.8 (69.8;73.9)	70.9 (68.7;73.1)	68.8 (66.6;71.0)	70.3 (68.1;72.6)	65.9 (63.7;68.0)	64.8 (62.7;67.0)	58.8 (55.7;61.9)	55.0 <sup>-</sup> (51.8;58.1)	66.8 (65.8;67.8)	66.4 (65.4;67.5)
Highly active* (%)	11.9 (10.5;13.3)	13.3 (11.8;14.9)	17.6 (15.9;19.4)	17.0 (15.2;18.9)	13.1 (11.5;14.6)	14.5 (12.8;16.2)	12.2 (10.7;13.7)	12.0 (10.5;13.5)	10.0 (8.1;11.8)	12.6 <sup>-</sup> (10.5;14.7)	13.2 (12.4;13.9)	14.4* (13.6;15.2)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of inactive that do not add up to 100%.

<sup>\*</sup>Subgroup of active that do not add up to 100%.

**Table 38: Mean and proportion (95% CI) for estimates of sedentary behaviour among adults in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=2,158)	2014 (n=1,848)	2011 (n=1,935)	2014 (n=1,579)	2011 (n=1,845)	2014 (n=1,769)	2011 (n=1,905)	2014 (n=1,889)	2011 (n=1,030)	2014 (n=1,007)	2011 (n=8,873)	2014 (n=8,092)
Recreational screen time (h/d)	4.0 (3.8;4.1)	4.2* (4.0;4.3)	3.8 (3.7;3.9)	4.4*** (4.2;4.5)	3.6 (3.5;3.7)	3.4 <sup>-</sup> (3.3;3.6)	3.4 (3.3;3.5)	3.8*** (3.6;3.9)	4.5 (4.3;4.7)	4.0*** (3.8;4.2)	3.9 (3.8;4.0)	3.9 (3.8;4.0)
TV (h/d)	2.5 (2.4;2.6)	2.5 (2.4;2.6)	2.4 (2.2;2.5)	2.6** (2.5;2.7)	2.1 (2.0;2.2)	1.8*** (1.8;1.9)	1.8 (1.7;1.9)	1.8 (1.7;1.9)	2.7 (2.6;2.9)	2.2*** (2.1;2.3)	2.4 (2.3;2.4)	2.2*** (2.2;2.3)
Computer (h/d)	1.5 (1.4;1.5)	1.8*** (1.7;1.9)	1.5 (1.4;1.5)	2.0*** (1.8;2.1)	1.5 (1.4;1.6)	1.6* (1.5;1.7)	1.7 (1.6;1.8)	2.0*** (1.9;2.1)	1.8 (1.7;1.9)	1.9 (1.8;2.0)	1.5 (1.5;1.6)	1.8*** (1.8;1.8)
High recreational screen time (> 4 h/d) (%)	29.8 (27.9;31.8)	33.2* (31.1;35.4)	27.0 (25.0;29.0)	35.1*** (32.7;37.5)	24.9 (22.9;26.9)	25.1 (23.1;27.1)	22.1 (20.3;24.0)	26.2** (24.2;28.2)	36.5 (33.6;39.5)	31.3* (28.4;34.1)	28.6 (27.7;29.5)	30.0* (29.0;31.0)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

### 6.2.2 Gender

#### Physical activity

In 2014, the proportion of inactive did not differ between genders in the Nordic region and in each of the five Nordic countries. However, the proportion of highly inactive and highly active was higher in men than in women in the Nordic region (Table 39 and 40). Further, the proportion of highly inactive was higher in men than in women in Finland, Sweden and Norway, and the proportion of highly active was higher in men than in women in Denmark.

Data showed no change in mean MVPA from 2011 to 2014 in men and women in the Nordic region. But mean MVPA increased in women in Denmark and Finland due to an increase in mean MPA.

**Table 39: Mean and proportion (95% CI) and for estimates of physical activity among *men* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=960)	2014 (n=917)	2011 (n=818)	2014 (n=713)	2011 (n=831)	2014 (n=732)	2011 (n=864)	2014 (n=845)	2011 (n=482)	2014 (n=431)	2011 (n=3,955)	2014 (n=3,638)
MVPA (h/wk)	4.6 (4.3;4.9)	4.9 (4.6;5.2)	5.6 (5.2;5.9)	5.1 <sup>-</sup> (4.8;5.4)	5.0 (4.7;5.4)	5.3 (5.0;5.6)	5.0 (4.7;5.3)	5.0 (4.6;5.3)	4.5 (4.0;4.9)	4.3 (3.8;4.7)	4.9 (4.8;5.1)	4.9 (4.8;5.1)
MPA (h/wk)	3.0 (2.7;3.2)	2.8 (2.6;3.0)	3.3 (3.0;3.6)	3.3 (3.0;3.5)	3.2 (2.9;3.5)	3.0 (2.7;3.2)	2.8 (2.5;3.0)	2.6 (2.4;2.9)	2.5 (2.2;2.8)	3.1* (2.7;3.5)	3.0 (2.9;3.2)	3.0 (2.9;3.1)
VPA (h/wk)	1.6 (1.5;1.8)	2.1*** (1.9;2.2)	2.2 (2.1;2.4)	1.8** (1.7;2.0)	1.9 (1.7;2.0)	2.3** (2.1;2.5)	2.2 (2.0;2.4)	2.3 (2.1;2.5)	1.7 (1.5;1.9)	1.2*** (1.0;1.4)	1.9 (1.8;1.9)	1.9 (1.8;2.0)
Inactive(%)	35.6 (32.5;38.6)	34.6 (31.5;37.7)	27.4 (24.4;30.5)	31.2 (27.8;34.6)	33.5 (30.3;36.7)	28.9* (25.6;32.2)	33.9 (30.7;37.0)	35.9 (32.7;39.2)	40.3 (35.9;44.7)	46.0 <sup>-</sup> (41.2;50.7)	34.1 (32.6;35.6)	34.0 (32.5;35.6)
Highly inactive# (%)	13.6 (11.5;15.8)	14.4 (12.1;16.6)	8.7 (6.7;10.6)	10.4 (8.1;12.6)	11.6 (9.4;13.8)	12.5 (10.1;14.9)	14.7 (12.3;17.0)	18.6* (16.0;21.2)	17.7 (14.2;21.1)	20.9 (17.1;24.8)	12.7 (11.6;13.7)	14.2 <sup>-</sup> (13.0;15.3)
Active(%)	64.4 (61.4;67.5)	65.4 (62.3;68.5)	72.6 (69.5;75.6)	68.8 (65.4;72.2)	66.5 (63.3;69.7)	71.1* (67.8;74.4)	66.1 (63.0;69.3)	64.1 (60.8;67.3)	59.7 (55.3;64.1)	54.0 <sup>-</sup> (49.3;58.8)	65.9 (64.4;67.4)	66.0 (64.4;67.5)
Highly active* (%)	13.0 (10.8;15.1)	15.6 <sup>-</sup> (13.3;18.0)	18.4 (15.7;21.0)	16.6 (13.9;19.4)	12.5 (10.2;14.7)	15.1 (12.5;17.7)	14.0 (11.7;16.3)	12.3 (10.1;14.5)	8.9 (6.3;11.5)	13.9* (10.6;17.2)	13.1 (12.0;14.1)	15.3** (14.1;16.5)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

#Subgroup of inactive that do not add up to 100%.

\*Subgroup of active that do not add up to 100%.

**Table 40: Mean and proportion (95% CI) for estimates of physical activity among *women* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=1,133)	2014 (n=982)	2011 (n=999)	2014 (n=924)	2011 (n=941)	2014 (n=900)	2011 (n=1,000)	2014 (n=1,071)	2011 (n=529)	2014 (n=514)	2011 (n=4,602)	2014 (n=4,391)
MVPA (h/wk)	4.3 (4.1;4.6)	4.8* (4.5;5.0)	5.0 (4.8;5.3)	5.5* (5.2;5.8)	5.0 (4.7;5.3)	5.1 (4.8;5.4)	4.3 (4.1;4.5)	4.6 (4.3;4.8)	4.4 (4.0;4.8)	4.0 (3.6;4.3)	4.7 (4.6;4.9)	4.9 <sup>-</sup> (4.8;5.0)
MPA (h/wk)	3.0 (2.8;3.2)	3.3* (3.1;3.6)	3.4 (3.1;3.6)	3.9** (3.6;4.1)	3.4 (3.1;3.6)	3.3 (3.0;3.5)	2.6 (2.4;2.8)	2.6 (2.4;2.9)	2.8 (2.5;3.1)	2.7 (2.4;3.0)	3.2 (3.1;3.3)	3.3 (3.2;3.4)
VPA (h/wk)	1.3 (1.2;1.4)	1.4 (1.3;1.5)	1.7 (1.6;1.8)	1.6 (1.5;1.8)	1.7 (1.5;1.8)	1.8 (1.7;2.0)	1.8 (1.7;1.9)	1.9 (1.8;2.0)	1.5 (1.3;1.6)	1.2 <sup>-</sup> (1.1;1.4)	1.5 (1.5;1.6)	1.6 (1.5;1.6)
Inactive(%)	33.3 (30.6;36.0)	33.9 (31.0;36.9)	28.8 (26.0;31.6)	27.2 (24.3;30.1)	28.8 (25.8;31.7)	30.4 (27.4;33.4)	34.4 (31.5;37.3)	34.4 (31.6;37.3)	42.0 (37.8;46.3)	44.2 (39.9;48.4)	32.4 (31.0;33.7)	33.1 (31.7;34.5)
Highly inactive# (%)	10.0 (8.2;11.7)	12.4 <sup>-</sup> (10.3;14.5)	5.5 (4.1;6.9)	6.5 (4.9;8.1)	6.8 (5.2;8.5)	9.4* (7.5;11.3)	13.4 (11.3;15.6)	16.3 <sup>-</sup> (14.1;18.5)	13.3 (10.3;16.2)	15.5 (12.4;18.6)	8.6 (7.7;9.4)	10.6*** (9.7;11.6)
Active(%)	66.7 (64.0;69.4)	66.1 (63.1;69.0)	71.2 (68.4;74.0)	72.8 (69.9;75.7)	71.2 (68.3;74.2)	69.6 (66.6;72.6)	65.6 (62.6;68.5)	65.6 (62.7;68.4)	58.0 (53.7;62.2)	55.8 (51.6;60.1)	67.6 (66.3;69.0)	66.9 (65.5;68.3)
Highly active* (%)	10.9 (9.0;12.7)	11.0 (9.1;13.0)	17.0 (14.7;19.3)	17.4 (14.9;19.8)	13.7 (11.4;15.9)	13.8 (11.6;16.1)	10.4 (8.5;12.3)	11.7 (9.8;13.7)	11.1 (8.4;13.8)	11.4 (8.6;14.1)	13.2 (12.2;14.2)	13.5 (12.5;14.6)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of inactive that do not add up to 100%.

<sup>\*</sup>Subgroup of active that do not add up to 100%.

Between 2011 and 2014, in the Nordic region, the proportion of highly inactive increased in women and tended to increase in men. No change was observed in the proportion of inactive in both genders between 2011 and 2014. When analysing each of the five Nordic countries, the proportion of inactive decreased in men in Sweden while no change was found in women. Furthermore, an upward tendency from 2011 to 2014 was found in the proportion of highly inactive in both men and women in all the Nordic countries. The increase was significant in men in Iceland and in women in Sweden.

Finally, the proportion of highly active increased in men in the Nordic region and in Norway.

### **Sedentary behaviour**

In 2014, the proportion with high recreational screen time was higher in men than in women in the Nordic region (32.7% vs. 27.3%). This gender difference was also found in Finland, Sweden and Norway.

Between 2011 and 2014, mean recreational screen time did not change in men and women in the Nordic region while mixed results were found when the development in each of the five countries was examined (Table 41 and 42). However, the pattern of recreational screen time changed from 2011 to 2014 in men and women in the Nordic region: TV time declined and computer time rose.

In the Nordic region, data from 2011 to 2014 showed no change in the proportion with high recreational screen time in men and women. Analyses in each of the five Nordic countries showed an increase in the proportion with high recreational screen time in men in Finland and in women in Denmark, Finland and Iceland. Hence, data showed an increase in the proportion with high recreational screen time in men and/or women in Denmark, Finland and Iceland, but not in Sweden and Norway.



**Table 41: Mean and proportion (95% CI) and for estimates of sedentary behaviour among *men* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=999)	2014 (n=889)	2011 (n=888)	2014 (n=686)	2011 (n=862)	2014 (n=811)	2011 (n=888)	2014 (n=842)	2011 (n=499)	2014 (n=462)	2011 (n=4,136)	2014 (n=3,690)
Recreational screen time (h/d)	4.1 (3.9;4.3)	4.1 (3.9;4.3)	3.9 (3.7;4.2)	4.7*** (4.4;5.0)	3.7 (3.5;3.9)	3.7 (3.5;3.9)	3.6 (3.4;3.7)	3.8 (3.6;4.0)	4.9 (4.5;5.2)	4.2** (3.9;4.5)	4.1 (4.0;4.2)	4.1 (4.0;4.2)
TV (h/d)	2.5 (2.3;2.6)	2.4 (2.3;2.6)	2.4 (2.2;2.6)	2.8** (2.6;3.0)	2.1 (2.0;2.2)	2.0 (1.8;2.1)	1.8 (1.7;2.0)	1.8 (1.7;1.9)	2.9 (2.6;3.1)	2.3*** (2.1;2.5)	2.4 (2.3;2.5)	2.3* (2.2;2.4)
Computer (h/d)	1.6 (1.5;1.8)	1.8* (1.7;2.0)	1.6 (1.4;1.7)	2.2*** (2.0;2.3)	1.6 (1.4;1.7)	1.8* (1.6;1.9)	1.8 (1.6;1.9)	2.0* (1.9;2.2)	2.0 (1.8;2.2)	2.0 (1.8;2.2)	1.7 (1.6;1.7)	1.9*** (1.9;2.0)
High recreational screen time (> 4 h/d) (%)	34.0 (31.0;36.9)	32.4 (29.3;35.5)	28.6 (25.7;31.6)	40.7*** (37.0;44.4)	25.9 (23.0;28.8)	28.0 (24.9;31.0)	23.1 (20.4;25.9)	26.3 (23.3;29.3)	40.6 (36.3;45.0)	35.0 <sup>-</sup> (30.6;39.4)	31.1 (29.7;32.5)	32.7 (31.2;34.2)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

**Table 42: Mean and proportion (95% CI) for estimates of sedentary behaviour among *women* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=1,159)	2014 (n=958)	2011 (n=1,047)	2014 (n=893)	2011 (n=983)	2014 (n=958)	2011 (n=1,017)	2014 (n=1,047)	2011 (n=531)	2014 (n=545)	2011 (n=4,737)	2014 (n=4,401)
Recreational screen time (h/d)	3.8 (3.6;3.9)	4.2*** (4.0;4.4)	3.7 (3.5;3.9)	4.1** (3.9;4.3)	3.5 (3.3;3.7)	3.2** (3.0;3.4)	3.3 (3.1;3.4)	3.7*** (3.6;3.9)	4.1 (3.9;4.4)	3.8 <sup>-</sup> (3.6;4.1)	3.7 (3.6;3.8)	3.7 (3.6;3.8)
TV (h/d)	2.5 (2.4;2.6)	2.6 (2.4;2.8)	2.3 (2.1;2.4)	2.4 (2.3;2.6)	2.1 (2.0;2.3)	1.7*** (1.6;1.8)	1.8 (1.7;1.9)	1.9 (1.7;2.0)	2.5 (2.3;2.7)	2.1** (2.0;2.3)	2.3 (2.3;2.4)	2.1*** (2.1;2.2)
Computer (h/d)	1.3 (1.2;1.4)	1.8*** (1.7;2.0)	1.4 (1.3;1.5)	1.8*** (1.6;1.9)	1.4 (1.3;1.5)	1.5 (1.4;1.6)	1.6 (1.5;1.7)	1.9*** (1.8;2.1)	1.6 (1.4;1.8)	1.8 (1.6;2.0)	1.4 (1.4;1.5)	1.7*** (1.6;1.7)
High recreational screen time (> 4 h/d) (%)	25.7 (23.2;28.2)	34.1*** (31.1;37.1)	25.5 (22.9;28.1)	30.0* (27.0;33.0)	23.9 (21.2;26.5)	22.1 (19.5;24.8)	21.1 (18.6;23.6)	26.0** (23.4;28.7)	32.2 (28.2;36.2)	27.5 <sup>-</sup> (23.8;31.3)	26.1 (24.9;27.4)	27.3 (26.0;28.6)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

### 6.2.3 Age

#### Physical activity

In 2014, the proportion of inactive was higher in 25–44- and 45–65-y-olds than in 18–24-y-olds in the Nordic region. Similar results were found in Denmark. In Sweden, a higher proportion of inactive was seen in 45–65-y-olds than in 18–24-y-olds, while a higher proportion of inactive was found in 45–65-y-olds than in 25–44-y-olds in Iceland. In Norway, a higher proportion of inactive was observed in 25–44-y-olds than in 45–65-y-olds. No difference between age groups was seen in Finland.

Data in the three age groups displayed no change in mean MVPA between 2011 and 2014 when analysing the Nordic region (Table 43). Analyses in each of the five Nordic countries showed that mean MVPA increased in 45–65-y-olds in Denmark.

**Table 43: Mean and proportion (95% CI) for estimates of physical activity among adults according to age in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	18–24 y		25–44 y		45–65 y	
	2011 (n=964)	2014 (n=775)	2011 (n=3,204)	2014 (n=2,864)	2011 (n=4,389)	2014 (n=4,391)
MVPA (h/wk)	5.8 (5.5;6.1)	5.9 (5.5;6.2)	4.5 (4.3;4.6)	4.6 (4.4;4.8)	4.8 (4.7;5.0)	4.9 (4.8;5.0)
MPA (h/wk)	3.2 (2.9;3.4)	3.0 (2.8;3.3)	2.7 (2.6;2.8)	2.8 (2.7;2.9)	3.4 (3.3;3.6)	3.5 (3.4;3.7)
VPA (h/wk)	2.6 (2.4;2.8)	2.8 (2.6;3.0)	1.7 (1.7;1.8)	1.8 (1.7;1.9)	1.4 (1.3;1.5)	1.4 (1.3;1.4)
Inactive(%)	22.9 (20.2;25.5)	27.6* (24.5;30.7)	35.0 (33.3;36.6)	35.5 (33.7;37.3)	35.1 (33.7;36.5)	33.7 (32.3;35.1)
Highly inactive <sup>#</sup> (%)	6.4 (4.9;7.9)	12.2*** (9.9;14.4)	12.0 (10.9;13.1)	13.0 (11.7;14.2)	10.7 (9.8;11.6)	12.0 <sup>~</sup> (11.0;13.0)
Active(%)	77.1 (74.5;79.8)	72.4* (69.3;75.5)	65.0 (63.4;66.7)	64.5 (62.7;66.3)	64.9 (63.5;66.3)	66.3 (64.9;67.7)
Highly active <sup>s</sup> (%)	19.8 (17.3;22.3)	22.7 (19.8;25.6)	11.9 (10.8;13.0)	13.3 (12.0;14.6)	12.2 (11.2;13.1)	12.7 (11.7;13.7)

Note: <sup>~</sup>p<0.10, \*p<0.05, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>#</sup>Subgroup of inactive that do not add up to 100%.

<sup>s</sup>Subgroup of active that do not add up to 100%.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

Between 2011 and 2014, the proportions of inactive and highly inactive increased in 18–24-y-olds in the Nordic region. The proportion of highly inactive nearly doubled in 18–24-y-olds and is now similar to other age groups. Data in each of the five Nordic countries showed that the proportions of inactive and highly inactive increased from 2011 to 2014 in 18–24-y-olds in Iceland and Norway (Iceland inactive: from 21.6% to 32.8% and Norway inactive: from 22.6% to 45.3%).

Finally, the proportion of highly active increased in 25–44-y-olds in Norway.

### Sedentary behaviour

In 2014, the proportion with high recreational screen time was higher in 18–24-y-olds than in 25–44- and 45–65-y-olds in the Nordic region. Similar results were found in Denmark, Finland and Norway. In Sweden and Iceland, an inverse age gradient was found, i.e. the proportion with high recreational screen time decreased across age groups.

Data from 2011 to 2014 showed no change in mean recreational screen time in the three age groups in the Nordic region, but the pattern of screen time changed because TV time decreased in 18–24- and 25–44-y-olds and computer time increased in 25–44- and 45–65-y-olds (Table 44). Mixed results were found for the development of recreational screen time from 2011 to 2014 in 18–24- and 25–44-y-olds in the five Nordic countries, but not in 45–65-y-olds where an increase was found in Denmark, Finland and Iceland.

**Table 44: Mean and proportion (95% CI) for estimates of sedentary behaviour among adults according to age in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	18–24 y		25–44 y		45–65 y	
	2011 (n=989)	2014 (n=793)	2011 (n=3,307)	2014 (n=2,917)	2011 (n=4,577)	2014 (n=4,382)
Recreational screen time (h/d)	5.0 (4.8;5.2)	4.7 (4.5;5.0)	3.8 (3.7;3.9)	3.8 (3.7;3.9)	3.6 (3.6;3.7)	3.7 (3.7;3.8)
TV (h/d)	2.2 (2.1;2.3)	1.9** (1.8;2.0)	2.2 (2.2;2.3)	2.0*** (1.9;2.1)	2.5 (2.4;2.6)	2.5 (2.5;2.6)
Computer (h/d)	2.8 (2.6;2.9)	3.0 (2.8;3.1)	1.5 (1.5;1.6)	1.9*** (1.8;1.9)	1.1 (1.1;1.2)	1.4*** (1.3;1.4)
High recreational screen time (> 4 h/d) (%)	48.3 (45.2;51.3)	46.5 (43.2;49.9)	26.3 (24.8;27.8)	27.5 (25.8;29.1)	24.5 (23.2;25.7)	27.1** (25.8;28.4)

Note: \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

Between 2011 and 2014, there was an increase in the proportion with high recreational screen time in 45–65-y-olds in the Nordic region. Moreover, the proportion with high recreational screen time increased in 18–24-y-olds in Finland (from 37.6% to 48.2%) and decreased in Norway (from 65.1% to 49.6%). In 25–44-y-olds, an increase was found in Finland (from 27.7% to 33.8%) and Iceland (from 20.6% to 27.7%), and in 45–65-y-olds, the proportion with high recreational screen time increased in Denmark (from 27.4% to 31.4%) and Finland (from 23.7% to 32.8%). Thus, Finland was the only Nordic country where an increase in the proportion with high recreational screen time was found in all age groups.

#### **6.2.4 Education**

##### **Physical activity**

In 2014, the proportion of inactive was higher among the low and medium educated than among the high educated in the Nordic region. In Iceland and Norway, the proportion of inactive was higher among the low educated than among the high educated, while in Denmark and Finland the proportion of inactive was higher among the medium educated than among the high educated. No difference between education groups was found in Sweden. Large social differences in physical activity (inactive) were found among adults in the Nordic Region and in Sweden, Iceland and Norway while moderate differences were seen in Denmark and Finland.

Analyses showed an increase in mean MVPA from 2011 to 2014 among the high educated in the Nordic region (Table 45). Mean MVPA increased among the high educated in all the Nordic countries, except in Finland.

Data showed that the proportion of highly inactive increased from 2011 to 2014 among the medium and high educated in the Nordic region. No change was found in the proportion of inactive between 2011 and 2014 in the three education groups in the Nordic region. When analysing each of the five Nordic countries, the proportion of inactive decreased from 2011 to 2014 among the low educated in Finland (from 37.9% to 29.3%) while no change was observed among the medium and high educated in the five Nordic countries. Moreover, between 2011 and 2014, the proportion of highly inactive increased among the low educated in Iceland, decreased among the low educated in Finland, and increased among the medium educated in Norway. Thus, findings were not systematic in the Nordic countries.

**Table 45: Mean and proportion (95% CI) for estimates of physical activity *among adults according to education* in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=1,337)	2014 (n=1,001)	2011 (n=3,703)	2014 (n=2,918)	2011 (n=3,481)	2014 (n=4,098)
MVPA (h/wk)	5.2 (4.9;5.5)	5.0 (4.8;5.3)	4.9 (4.8;5.1)	5.0 (4.8;5.1)	4.6 (4.4;4.7)	5.0*** (4.8;5.1)
MPA (h/wk)	3.5 (3.3;3.7)	3.2 <sup>~</sup> (2.9;3.4)	3.2 (3.0;3.3)	3.2 (3.0;3.3)	2.9 (2.8;3.0)	3.3*** (3.2;3.4)
VPA (h/wk)	1.6 (1.5;1.7)	1.9** (1.7;2.0)	1.8 (1.7;1.8)	1.8 (1.7;1.8)	1.7 (1.6;1.8)	1.7 (1.7;1.8)
Inactive(%)	38.0 (35.0;40.9)	36.6 (33.1;40.1)	33.4 (31.9;34.9)	33.7 (32.0;35.4)	30.1 (28.7;31.6)	30.1 (28.7;31.4)
Highly inactive <sup>#</sup> (%)	14.2 (12.1;16.3)	14.7 (12.1;17.3)	10.6 (9.6;11.6)	12.9** (11.7;14.1)	7.8 (6.9;8.7)	9.0* (8.2;9.9)
Active(%)	62.0 (59.1;65.0)	63.4 (59.9;66.9)	66.6 (65.1;68.1)	66.3 (64.6;68.0)	69.9 (68.4;71.3)	69.9 (68.6;71.3)
Highly active <sup>*</sup> (%)	12.9 (10.8;14.9)	14.4 (11.8;16.9)	14.2 (13.0;15.3)	14.8 (13.5;16.1)	12.4 (11.4;13.5)	15.0*** (13.9;16.1)
Relative difference inactive <sup>~</sup> (%)	–	–	–	–	–26	–22

Note: <sup>~</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of inactive that do not add up to 100%.

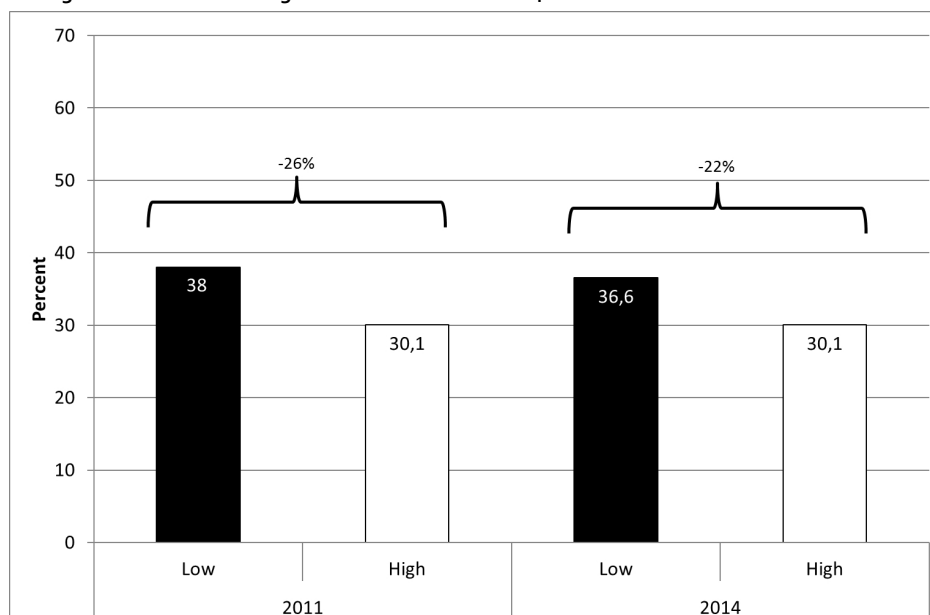
<sup>\*</sup>Subgroup of active that do not add up to 100%.

<sup>~</sup>Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

The proportion of highly active increased among the high educated in the Nordic region and a systematic upward tendency was found in all the Nordic countries, except in Finland. However, the increase was only significant in Denmark.

Between 2011 and 2014, the social difference in physical activity did not change among adults in the Nordic region (Figure 5). Data in each of the five Nordic countries showed mixed results because the social difference increased slightly in Sweden, decreased in Denmark and Finland while no change was found in Iceland and Norway.

Figure 5: The development from 2011 to 2014 in the social difference in physical activity (inactive) among adults in the Nordic region. NORMO 2011 and 2014



### Sedentary behaviour

In 2014, an inverse social gradient was found in sedentary behaviour among adults in the Nordic region and in Denmark and Sweden i.e. the higher the education level, the lower the proportion with high recreational screen time. In Norway, the proportion with high recreational screen time was higher among the low educated than among the medium and high educated while in Iceland the proportion was higher among the low and medium educated than among the high educated. In Finland, the proportion with high recreational screen time was higher among the medium educated than among the high educated. Large social differences were found in sedentary behaviour (high recreational screen time) among adults in the Nordic region and in each of the five Nordic countries, except in Finland with just a small difference.

Data from 2011 to 2014 showed an increase in mean computer time among the low educated in the Nordic region that also explained the increase in mean recreational screen time (Table 4.6). Mean recreational screen time did not change among the medium and high educated, but the pattern of screen time changed from less TV time to more computer time. Between 2011 and 2014, data in each of the five Nordic countries

showed an increase in mean recreational screen time among the low educated in Denmark and Iceland due to more computer time while results among the medium and high educated were mixed.

In the Nordic region, an increase from 2011 to 2014 was found in the proportion with high recreational screen time among the low educated. Between 2011 and 2014, data in each of the five Nordic countries showed that the proportion with high recreational screen time increased among the low educated in Denmark (from 33.7% to 44.6%), Sweden (from 26.1% to 37.7%) and Iceland (from 24.9% to 30.6%). An increase was also found in the proportion with high recreational screen time among the medium educated in Finland (from 28.1% to 38.5%) while a decrease was seen in Norway (from 36.4% to 28.3%). Finally among the high educated the proportion with high recreational screen time increased in Finland (from 24.4% to 31.3%) and decreased in Norway (from 31.9% to 25.9%). Hence, the proportion with high recreational screen time increased among the low educated in Denmark, Sweden and Iceland while results among the medium and high educated were mixed.

**Table 46: Mean and proportion (95% CI) for estimates of sedentary behaviour *among adults according to education* in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=1,392)	2014 (n=971)	2011 (n=3,858)	2014 (n=2,956)	2011 (n=3,583)	2014 (n=4,151)
Recreational screen time (h/d)	4.1 (3.9;4.3)	4.5** (4.3;4.7)	3.9 (3.8;4.0)	3.8 (3.7;3.9)	3.7 (3.6;3.8)	3.6 (3.5;3.7)
TV (h/d)	2.7 (2.5;2.8)	2.7 (2.6;2.9)	2.4 (2.3;2.4)	2.2** (2.1;2.3)	2.1 (2.1;2.2)	1.9*** (1.9;2.0)
Computer (h/d)	1.4 (1.3;1.5)	1.9*** (1.7;2.0)	1.6 (1.5;1.6)	1.7*** (1.7;1.8)	1.6 (1.5;1.6)	1.8*** (1.7;1.9)
High recreational screen time (> 4 h/d) (%)	31.8 (29.1;34.5)	39.2** (35.6;42.8)	29.2 (27.8;30.6)	29.8 (28.1;31.4)	25.8 (24.4;27.1)	24.4 (23.2;25.7)
Relative difference high recreational screen time* (%)	–	–	–	–	–23	–60

Note: \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

\*Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

In the Nordic region, the social difference in sedentary behaviour increased among adults from 2011 to 2014 because the low educated increased their recreational screen time. The social difference in sedentary behaviour increased in all the Nordic countries, except in Finland where a decrease was seen.

### 6.2.5 Children

#### Physical activity

In 2014, children in the Nordic region spent about six and a half hours weekly on MVPA during leisure time which is close to the total amount for meeting the physical activity recommendations. Results showed that six in ten children were physically inactive in the Nordic region. Ranking of the proportions of inactive and with high recreational screen time in the five Nordic countries is shown in Table 47. The proportion of inactive was lower in Finland than in the other Nordic countries and higher in Sweden than in the other Nordic countries. Moreover, the proportion of inactive was higher in Denmark and Norway than in Iceland.

**Table 47: Ranking from lowest to highest proportions of inactive and with high recreational screen time among children in the five Nordic countries. NORMO 2014**

Inactive (%)		High recreational screen time (> 4 h/day) (%)	
Finland	41.4	Iceland	5.5
Iceland	47.7	Sweden	13.3
Denmark	59.2	Finland	14.5
Norway	59.8	Norway	15.9
Sweden	68.9	Denmark	20.1

Table 48 shows the development of physical activity from 2011 to 2014 among children in the Nordic countries. Mean MVPA and the proportions of inactive and highly inactive did not change from 2011 to 2014 in the Nordic region. Few changes were found in each of the five Nordic countries between 2011 and 2014. Mean MVPA decreased in Denmark, however no change was detected in the proportion of inactive. In Norway, the proportions of inactive and highly inactive decreased.



**Table 48: Mean and proportion (95% CI) for estimates of physical activity among children in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=606)	2014 (n=596)	2011 (n=495)	2014 (n=500)	2011 (n=499)	2014 (n=498)	2011 (n=510)	2014 (n=510)	2011 (n=353)	2014 (n=358)	2011 (n=2,463)	2014 (n=2,462)
MVPA (h/wk)	7.0 (6.6;7.4)	6.4* (6.1;6.7)	8.5 (8.0;9.0)	8.4 (7.9;8.8)	5.6 (5.2;6.0)	5.6 (5.2;6.0)	7.5 (7.1;7.9)	7.5 (7.1;7.9)	5.7 (5.3;6.2)	6.2 (5.7;6.6)	6.6 (6.4;6.8)	6.5 (6.3;6.6)
Inactive(%)	55.6 (51.7;59.6)	59.2 (55.2;63.1)	40.3 (36.0;44.6)	41.4 (37.1;45.7)	71.0 (67.0;74.9)	68.9 (64.8;72.9)	49.1 (44.8;53.4)	47.7 (43.4;52.0)	67.7 (62.8;72.6)	59.8* (54.7;64.8)	60.3 (58.4;62.2)	59.1 (57.1;61.0)
Highly inactive <sup>#</sup> (%)	2.0 (0.9;3.1)	2.2 (1.0;3.4)	0.9 (0.1;1.7)	0.8 (0.0;1.7)	5.6 (3.6;7.7)	4.1 (2.4;5.9)	1.6 (0.5;2.7)	2.7 (1.3;4.1)	3.6 (1.7;5.5)	1.3* (0.1;2.4)	3.4 (2.6;4.1)	2.4~ (1.8;3.1)
Active(%)	44.4 (40.4;48.3)	40.8 (36.9;44.8)	59.7 (55.4;64.0)	58.6 (54.3;62.9)	29.0 (25.1;33.0)	31.1 (27.1;35.2)	50.9 (46.6;55.2)	52.3 (48.0;56.6)	32.3 (27.4;37.2)	40.2* (35.2;45.3)	39.7 (37.8;41.6)	40.9 (39.0;42.9)

Note: ~p<0.10, \*p<0.05: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>#</sup>Subgroup of inactive that do not add up to 100%.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

### Sedentary behaviour

In 2014, children in the Nordic region spent on average three hours daily on TV and/or computer time during leisure. More than one in seven children spent more than four hours per day on recreational screen time in the Nordic region. The proportion with high recreational screen time was lower in Iceland than in the other Nordic countries and higher in Denmark than in Finland and Sweden (Table 47).

Between 2011 and 2014, mean recreational screen time decreased in the Nordic region while mixed results were found in the Nordic countries (Table 49). The pattern of recreational screen time changed in children from 2011 to 2014 in the same way as in adults, i.e. less TV time and more computer time probably due to smart phones and tablets have become more popular and replaced TV. No change was observed between 2011 and 2014 in the proportion with high recreational screen time in the Nordic region and in each of the five Nordic countries.

**Table 49: Mean and proportion (95% CI) for estimates of sedentary behaviour among children in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=599)	2014 (n=588)	2011 (n=488)	2014 (n=490)	2011 (n=478)	2014 (n=492)	2011 (n=504)	2014 (n=508)	2011 (n=332)	2014 (n=341)	2011 (n=2,401)	2014 (n=2,419)
Recreational screen time (h/d)	3.1 (2.9;3.3)	3.4* (3.2;3.6)	3.1 (2.8;3.3)	2.9 (2.6;3.1)	3.1 (2.9;3.3)	2.8** (2.6;2.9)	2.4 (2.2;2.6)	2.2 <sup>-</sup> (2.0;2.3)	3.4 (3.1;3.7)	3.1 (2.8;3.4)	3.2 (3.1;3.3)	3.0* (2.9;3.1)
TV (h/d)	1.9 (1.8;2.0)	1.8 (1.7;2.0)	2.1 (1.9;2.3)	1.5*** (1.4;1.7)	2.0 (1.8;2.1)	1.5*** (1.4;1.6)	1.4 (1.3;1.5)	1.2** (1.1;1.3)	2.1 (1.9;2.3)	1.7** (1.5;1.9)	2.0 (1.9;2.1)	1.6*** (1.5;1.7)
Computer (h/d)	1.2 (1.1;1.3)	1.6*** (1.5;1.7)	1.0 (0.9;1.1)	1.3*** (1.2;1.5)	1.2 (1.1;1.4)	1.3 (1.2;1.4)	1.0 (0.9;1.1)	1.0 (0.9;1.1)	1.4 (1.2;1.5)	1.5 (1.3;1.8)	1.2 (1.2;1.3)	1.4*** (1.4;1.5)
High recreational screen time (> 4 h/d) (%)	16.7 (13.7;19.7)	20.1 (16.8;23.3)	16.3 (13.0;19.6)	14.5 (11.4;17.7)	16.3 (13.0;19.7)	13.3 (10.3;16.3)	8.5 (6.1;10.9)	5.5 <sup>-</sup> (3.5;7.5)	21.2 (16.8;25.6)	15.9 <sup>-</sup> (11.9;19.9)	17.3 (15.8;18.8)	15.5 <sup>-</sup> (14.0;16.9)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

### 6.2.6 Gender

#### Physical activity

In 2014, the proportion of inactive was higher in girls than in boys in the Nordic region (64.2% vs. 54.0%). A higher proportion of inactive girls was also seen in Denmark, Finland and Norway while no significant gender difference was observed in Sweden and Iceland.

Data from 2011 to 2014 showed a decrease in the proportion of highly inactive girls in the Nordic region while no change was found in boys (Table 50 and 51). Mean MVPA and the proportion of inactive did not change from 2011 to 2014 in boys and girls. When analysing each of the five Nordic countries, mean MVPA decreased in girls in Denmark, but no significant change was detected in the proportion of inactive. Furthermore, a decrease was found in the proportion of highly inactive in girls in Norway whereas an increase was found in girls in Iceland. Thus, significant findings in the development of physical activity were few and not systematic in the Nordic countries.

**Table 50: Mean and proportion (95% CI) for estimates of physical activity among boys in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=318)	2014 (n=294)	2011 (n=242)	2014 (n=243)	2011 (n=272)	2014 (n=257)	2011 (n=244)	2014 (n=255)	2011 (n=169)	2014 (n=173)	2011 (n=1,245)	2014 (n=1,222)
MVPA (h/wk)	7.2 (6.7;7.8)	7.0 (6.6;7.5)	9.9 (9.3;10.6)	9.2 (8.5;9.8)	6.3 (5.7;6.9)	6.0 (5.4;6.5)	7.8 (7.2;8.4)	7.9 (7.4;8.5)	6.2 (5.5;6.9)	6.9 (6.2;7.6)	7.2 (6.9;7.5)	7.0 (6.8;7.3)
Inactive(%)	53.4 (47.9;58.9)	53.3 (47.6;59.0)	27.7 (22.0;33.3)	33.4 (27.5;39.3)	65.1 (59.4;70.7)	66.1 (60.4;71.9)	47.9 (41.6;54.2)	43.9 (37.8;50.0)	61.8 (54.5;69.1)	52.8 <sup>-</sup> (45.3;60.2)	54.4 (51.6;57.1)	54.0 (51.2;56.8)
Highly inactive <sup>#</sup> (%)	2.0 (0.5;3.6)	1.4 (0.1;2.7)	1.3 (0.0;2.7)	1.7 (0.1;3.4)	4.2 (1.8;6.6)	4.3 (1.8;6.8)	2.7 (0.6;4.7)	1.0 (0.0;2.3)	3.9 (1.0;6.8)	2.1 (0.0;4.2)	3.1 (2.1;4.0)	2.7 (1.8;3.6)
Active(%)	46.6 (41.1;52.1)	46.7 (41.0;52.4)	72.3 (66.7;78.0)	66.6 (60.7;72.5)	34.9 (29.3;40.6)	33.9 (28.1;39.6)	52.1 (45.8;58.4)	56.1 (50.0;62.2)	38.2 (30.9;45.5)	47.2 <sup>-</sup> (39.8;54.7)	45.6 (42.9;48.4)	46.0 (43.2;48.8)

Note: <sup>-</sup>p<0.10: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>#</sup>Subgroup of inactive that do not add up to 100%.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 51: Mean and proportion (95% CI) for estimates of physical activity among girls in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=288)	2014 (n=302)	2011 (n=253)	2014 (n=257)	2011 (n=227)	2014 (n=241)	2011 (n=266)	2014 (n=255)	2011 (n=184)	2014 (n=185)	2011 (n=1,218)	2014 (n=1,240)
MVPA (h/wk)	6.7 (6.2;7.3)	5.7 <sup>**</sup> (5.3;6.1)	6.9 (6.3;7.4)	7.6 <sup>-</sup> (7.0;8.1)	4.9 (4.5;5.4)	5.2 (4.7;5.7)	7.1 (6.6;7.6)	7.1 (6.5;7.6)	5.3 (4.6;5.9)	5.4 (4.9;5.9)	5.9 (5.6;6.1)	5.9 (5.7;6.1)
Inactive(%)	58.0 (52.3;63.7)	65.2 <sup>-</sup> (59.8;70.5)	54.6 (48.5;60.7)	49.0 (42.9;55.1)	76.9 (71.4;82.4)	71.7 (66.0;77.5)	50.4 (44.4;56.4)	51.5 (45.3;57.6)	73.5 (67.1;79.8)	66.4 (59.6;73.2)	66.8 (64.1;69.4)	64.2 (61.5;66.9)
Highly inactive <sup>#</sup> (%)	1.9 (0.3;3.5)	3.1 (1.1;5.0)	0.5 (0.0;1.3)	1.7 (0.1;3.4)	7.1 (3.7;10.4)	3.9 (1.5;6.4)	0.5 (0.0;1.4)	4.4 <sup>**</sup> (1.9;6.9)	3.3 (0.7;5.8)	0.5 <sup>*</sup> (0.0;1.5)	3.6 (2.5;4.6)	2.2 <sup>*</sup> (1.4;3.0)
Active(%)	42.0 (36.3;47.7)	34.8 <sup>-</sup> (29.5;40.2)	45.4 (39.3;51.5)	51.0 (44.9;57.1)	23.1 (17.6;28.6)	28.3 (22.5;34.0)	49.6 (43.6;55.6)	48.5 (42.4;54.7)	26.5 (20.2;32.9)	33.6 (26.8;40.4)	33.2 (30.6;35.9)	35.8 (33.1;38.5)

Note: <sup>-</sup>p<0.10, <sup>\*</sup>p<0.05, <sup>\*\*</sup>p<0.01: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>#</sup>Subgroup of inactive that do not add up to 100%.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

### Sedentary behaviour

The proportion with high recreational screen time was higher in boys than in girls in the Nordic region (18.2% vs. 12.8%). A similar gender difference was observed in each of the five Nordic countries, but the difference was only significant in Finland.

Between 2011 and 2014, mean recreational screen time decreased in girls in the Nordic region while no change was found in boys (Table 52 and 53). Still, the pattern of screen time changed in a similar way in boys and girls: TV time decreased and computer time increased. Mean TV time decreased however more than mean computer time increased non-significantly in girls, while changes in TV time and computer time were of the same magnitude in boys. Analyses in each of the five Nordic countries showed an increase in recreational screen time from 2011 to 2014 in boys in Denmark. The reduced screen time in girls was reflected in a decrease from 2011 to 2014 in the proportion with high screen time in the Nordic region. No change was seen in boys. Data in each of the five Nordic countries did only show a decrease in the proportion with high recreational screen time in girls in Norway. Results on sedentary behaviour in boys and girls were therefore not as clear in each of the five Nordic countries as in the combined Nordic region.

**Table 52: Mean and proportion (95% CI) for estimates of sedentary behaviour among boys in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=313)	2014 (n=287)	2011 (n=239)	2014 (n=239)	2011 (n=257)	2014 (n=253)	2011 (n=238)	2014 (n=254)	2011 (n=159)	2014 (n=162)	2011 (n=1,206)	2014 (n=1,195)
Recreational screen time (h/d)	3.0 (2.8;3.3)	3.6** (3.3;4.0)	3.2 (2.8;3.6)	3.1 (2.8;3.5)	3.3 (3.0;3.6)	3.0 <sup>-</sup> (2.7;3.2)	2.7 (2.4;3.0)	2.4 (2.2;2.6)	3.5 (3.0;3.9)	3.4 (2.9;3.9)	3.2 (3.1;3.4)	3.2 (3.1;3.4)
TV (h/d)	1.8 (1.6;2.0)	2.0 (1.8;2.2)	2.2 (1.8;2.5)	1.7* (1.5;2.0)	2.2 (1.9;2.4)	1.6*** (1.4;1.8)	1.5 (1.3;1.7)	1.3* (1.1;1.4)	2.1 (1.8;2.4)	1.6** (1.3;1.8)	2.1 (2.0;2.2)	1.7*** (1.6;1.8)
Computer (h/d)	1.3 (1.2;1.4)	1.7** (1.5;1.9)	1.0 (0.8;1.2)	1.4** (1.2;1.6)	1.2 (1.1;1.4)	1.4 (1.2;1.5)	1.2 (1.0;1.3)	1.1 (1.0;1.3)	1.4 (1.2;1.6)	2.0** (1.6;2.4)	1.2 (1.2;1.3)	1.6*** (1.5;1.7)
High recreational screen time (> 4 h/d) (%)	16.3 (12.2;20.4)	22.6 <sup>-</sup> (17.7;27.4)	17.1 (12.3;21.8)	18.6 (13.7;23.6)	16.3 (11.8;20.9)	15.3 (10.9;19.7)	10.5 (6.6;14.3)	6.5 (3.5;9.5)	20.9 (14.6;27.2)	19.4 (13.0;25.8)	17.3 (15.1;19.4)	18.2 (16.0;20.4)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

**Table 53: Mean and proportion (95% CI) for estimates of sedentary behaviour among girls in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=286)	2014 (n=301)	2011 (n=249)	2014 (n=251)	2011 (n=221)	2014 (n=239)	2011 (n=266)	2014 (n=254)	2011 (n=173)	2014 (n=179)	2011 (n=1,195)	2014 (n=1,224)
Recreational screen time (h/d)	3.2 (2.9;3.4)	3.2 (2.9;3.5)	3.0 (2.6;3.3)	2.6 (2.3;2.9)	2.9 (2.6;3.2)	2.5 <sup>-</sup> (2.3;2.8)	2.1 (1.9;2.3)	1.9 (1.8;2.1)	3.4 (3.0;3.9)	2.9 <sup>-</sup> (2.5;3.3)	3.1 (2.9;3.2)	2.8** (2.6;2.9)
TV (h/d)	2.0 (1.8;2.3)	1.7* (1.4;1.9)	2.0 (1.8;2.3)	1.3*** (1.1;1.5)	1.7 (1.5;1.9)	1.4** (1.2;1.5)	1.3 (1.1;1.4)	1.0** (1.0;1.1)	2.1 (1.8;2.4)	1.8 (1.4;2.1)	1.9 (1.8;2.0)	1.5*** (1.4;1.6)
Computer (h/d)	1.2 (1.0;1.3)	1.6*** (1.4;1.7)	0.9 (0.8;1.1)	1.3** (1.1;1.5)	1.3 (1.0;1.5)	1.2 (1.1;1.3)	0.8 (0.7;1.0)	0.9 (0.8;1.0)	1.4 (1.2;1.6)	1.1 <sup>-</sup> (0.9;1.3)	1.2 (1.1;1.3)	1.3 (1.2;1.3)
High recreational screen time (> 4 h/d) (%)	17.1 (12.7;21.4)	17.6 (13.3;21.9)	15.5 (11.0;20.0)	10.6 (6.8;14.4)	16.3 (11.5;21.2)	11.2 (7.2;15.3)	6.5 (3.5;9.4)	4.5 (2.0;7.1)	21.5 (15.4;27.6)	13.0* (8.0;17.9)	17.3 (15.2;19.5)	12.8** (10.9;14.7)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

### 6.2.7 Parental education

#### Physical activity

In 2014, in the Nordic region, the proportion of inactive was higher in children with a medium educated parent than in children with a high educated parent while no difference was found between children with a low educated parent and children with a medium or high educated parent (Table 54). In Iceland, the proportion of inactive was higher in children with a low educated parent than in children with a medium or high educated parent. In the other Nordic countries, the proportion of inactive did not differ in children according to parental education. A small social difference in physical activity (inactive) was found in children in the Nordic region. Social differences are only reported in the Nordic region because it was not possible to assess social inequality in physical activity and sedentary behaviour in all the Nordic countries due to few participants in the low education group.

In the Nordic region, data from 2011 to 2014 showed no change in mean MVPA and in the proportion of inactive and highly inactive in three education groups. The only change in each of the five Nordic countries was a decrease in the proportion of inactive in children with a medium educated parent in Iceland (from 51.7% to 37.8%).

**Table 54: Mean and proportion (95% CI) for estimates of physical activity among children according to parental education in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=175)	2014 (n=144)	2011 (n=940)	2014 (n=633)	2011 (n=1,339)	2014 (n=1,673)
MVPA (h/wk)	7.2 (6.4;8.1)	6.6 (5.8;7.3)	6.3 (6.0;6.6)	6.0 (5.6;6.3)	6.5 (6.3;6.8)	6.6 (6.4;6.8)
Inactive(%)	58.4 (48.6;68.3)	60.3 (50.2;70.3)	62.9 (59.9;65.9)	63.9 (60.2;67.6)	58.9 (56.3;61.5)	57.5 (55.1;59.8)
Highly inactive (%)	5.8 (1.1;10.5)	2.2 (0.0;5.1)	3.4 (2.3;4.5)	3.5 (2.0;4.9)	1.9 (1.2;2.6)	2.0 (1.3;2.7)
Active(%)	41.6 (31.7;51.4)	39.7 (29.7;49.8)	37.1 (34.1;40.1)	36.1 (32.4;39.8)	41.1 (38.5;43.7)	42.5 (40.2;44.9)
Relative difference inactive* (%)	–	–	–	–	1	–5

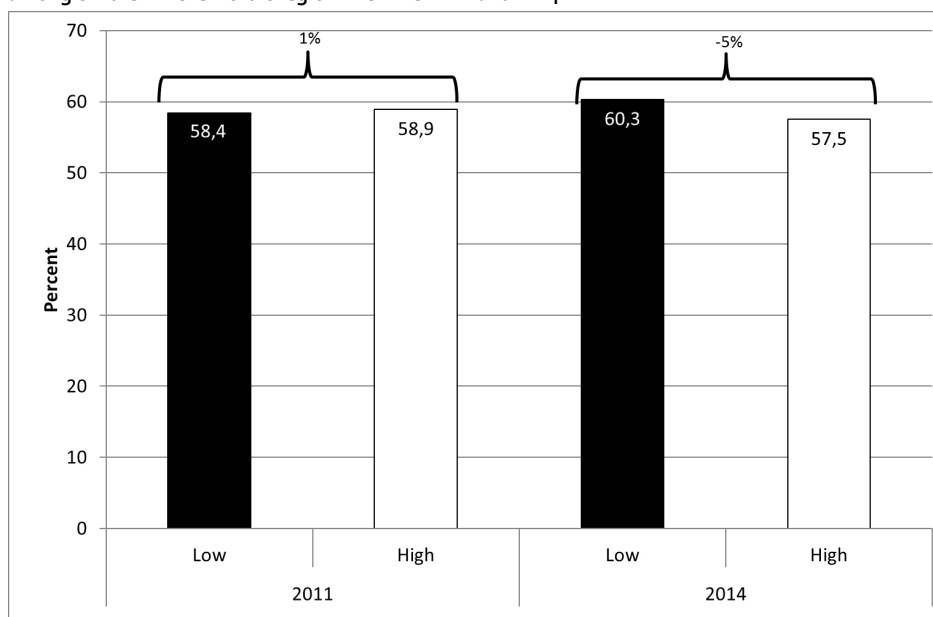
Note: <sup>@</sup>Weighted according to population size in the five Nordic countries

\*Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.



The social difference in physical activity did not change from 2011 to 2014 among children in the Nordic region (Figure 6).

**Figure 6: The development from 2011 to 2014 in the social difference in physical activity (inactive) among children in the Nordic region. NORMO 2011 and 2014**



### Sedentary behaviour

In 2014, there was no difference in the proportion of children with high recreational screen time across parental education groups in the Nordic region and in Sweden and Norway. In Iceland, the proportion of children with high recreational screen time was higher in children with a low educated parent than in children with a high educated parent. In Denmark, the proportion of children with high recreational screen time was higher in children with a medium educated parent than in children with a high educated parent while the opposite was found in Finland. A small social difference in sedentary behaviour (high recreational screen time) was found among children in the Nordic region.

**Table 55: Table 55: Mean and proportion (95% CI) for estimates of sedentary behaviour *among children according to parental education* in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=176)	2014 (n=142)	2011 (n=912)	2014 (n=619)	2011 (n=1,304)	2014 (n=1,646)
Recreational screen time (h/d)	3.7 (3.3;4.1)	3.1* (2.7;3.4)	3.0 (2.9;3.2)	3.0 (2.8;3.1)	3.0 (2.9;3.2)	3.0 (2.9;3.1)
TV (h/d)	2.3 (2.0;2.6)	1.6*** (1.4;1.9)	2.0 (1.8;2.1)	1.6*** (1.5;1.8)	1.9 (1.8;2.0)	1.5*** (1.4;1.6)
Computer (h/d)	1.5 (1.3;1.7)	1.4 (1.2;1.7)	1.1 (1.0;1.1)	1.4*** (1.3;1.5)	1.2 (1.1;1.2)	1.5*** (1.4;1.5)
High recreational screen time (> 4 h/d) (%)	24.0 (15.4;32.6)	13.8~ (6.7;21.0)	14.1 (11.9;16.3)	15.5 (12.7;18.4)	16.4 (14.4;18.4)	15.1 (13.4;16.8)
Relative difference high recreational screen time* (%)	–	–	–	–	–46	8

Note: ~p<0.10, \*p<0.05, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

\*Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

Data from 2011 to 2014 showed a decrease in mean TV time in children with a low educated parent in the Nordic region that explained the decrease in mean recreational screen time, but no significant change was detected in the proportion with high recreational screen time (Table 55). Mean recreational screen time and the proportion with high screen time did not change between 2011 and 2014 in children with a medium or high educated parent in the Nordic region. However, the pattern of screen time changed because TV time decreased and computer time increased. The changing screen time pattern was observed in children with a medium or high educated parent in all the Nordic countries, except in Norway. The proportion with high recreational screen time increased in children with a medium educated parent in Denmark (from 17.7% to 28.4%) because of a one hour daily increase in recreational screen time. Moreover, an increase in mean recreational screen time was found in children with a high educated parent in Norway, but no change was found in the proportion with high recreational screen time.

Between 2011 and 2014, the social difference in sedentary behaviour decreased considerably among children in the Nordic region.

## 6.3 Discussion

### 6.3.1 Adults

The main findings show an increase between 2011 and 2014 in the proportions of highly inactive and with high recreational screen time, albeit the increase in sedentary behaviour was modest in magnitude. This indicates that the lifestyle among adults in the Nordic region has become more inactive and sedentary. The increases in the proportions of highly inactive and/or with high recreational screen time were found in Denmark, Finland and Iceland. The increase in the proportion of highly inactive corresponds to almost 300,000 additional highly inactive 18–65-y-olds in the Nordic region (from 1.7 million in 2011 to 2.0 million in 2014). This increase is worrying from a public health point of perspective because of the adverse health effects associated with physical inactivity. The group of highly inactive and sedentary individuals would most likely achieve the greatest health benefits by increased physical activity (NNR 2012).

The proportion of highly active also increased slightly from 2011 to 2014 in the Nordic region. One may therefore speculate if the observation of increased proportions of highly inactive and highly active covers an increased polarisation in the physical activity pattern among adults in the Nordic region. The increased polarisation of physical activity between 2011 and 2014 is most pronounced in men and among the high educated.

The increase between 2011 and 2014 in the proportions of highly inactive or with high recreational screen time was found in women, 18–24- and 45–65-y-olds and in all education groups in the Nordic region. These results suggest that the unfavorable development in physical activity and/or sedentary behaviour apply to the general population. Therefore, further broad public health initiatives may therefore be needed in the Nordic countries that target physical inactivity and sedentary behaviour in the general population. Nevertheless, the low educated may be an especially relevant group to target in the Nordic region because of the high proportions of highly inactive and with high recreational screen time.

Social inequality in physical activity (inactive) did not change among adults in the Nordic region from 2011 to 2014. This looks encouraging at first glance. However, when examining the development in more detail, the proportion of highly inactive increased among the medium and high educated. In addition, social inequality in sedentary behaviour increased because the proportion with high recreational screen time increased

among the low educated. Overall, results indicate that either physical activity or sedentary behaviour has deteriorated in all social groups in the Nordic region.

The most alarming development of physical activity and sedentary behaviour was found in Iceland. Iceland was the only country where the proportions of highly inactive and with high recreational screen time increased between 2011 and 2014. In contrast, no changes were detected in the proportions of highly inactive and with high recreational screen time in Sweden. These observations may be linked to the OB increase in Iceland and the unchanged OB prevalence in Sweden between 2011 and 2014. Still, OB also increased in Norway and a non-significant upward trend was seen in Denmark and Finland indicating that obesity is a rising public health problem in the Nordic countries.

The development from 2011 to 2014 in physical activity and sedentary behaviour was different in Norway than in the other Nordic countries because Norway was the only country with an upward tendency in physical inactivity (unfavorable development) and a downward tendency in sedentary behaviour (favorable development). Data from Norway should, however, be interpreted with caution due to the low participation rates in both survey years.

### **6.3.2**      *Comparison with other national estimates from the Nordic countries among adults*

#### **Physical activity**

Table 56 shows other national population estimates and the recent development of physical activity among adults in the Nordic countries. Other national estimates that cover the time period from 2007 to 2014 are compared with NORMO data to evaluate similarities and differences in the population levels and the development in physical activity and sedentary behaviour among adults. Other national estimates differ from NORMO data with regard to participation rates, sample sizes, survey periods, age groups, assessment methods and definitions of physical activity used. Comparisons between other national estimates and NORMO data should therefore be interpreted with caution. Another important issue related to comparisons between other national estimates and NORMO data is that diet and physical activity are the main topics in NORMO while many of the other national surveys are more general health and disease oriented. Thus, it is possible that participants in the other national surveys have a less healthy lifestyle than participants in NORMO.

**Table 56: Population levels and the development of physical activity among *adults* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden		Iceland		Norway
	2010	2011–2013	2011	2014	2011	2014	2007	2012	2008–2009 <sup>a</sup>
	(18–75 y)	(18–65 y)	(15–64 y)		(16–84 y)		(18–79 y)		(20–85 y)
Inactive(%)	28.6	28.9	69.7	65.8	35.0	34.0	50.0	N/A	80.0
Active(%)	71.4	71.1	30.3 <sup>#</sup>	34.2 <sup>#</sup>	65.0 <sup>£</sup>	66.0 <sup>£</sup>	50.0 <sup>£</sup>	N/A	20.0

Note: N/A: Not available.

<sup>#</sup> ≥ 4 times leisure-time physical activity per week; including at least moderate intensity activity for at least 30 minutes each time.

<sup>£</sup>MVPA ≥ 30 min/day.

<sup>a</sup>Measured data (accelerometri).

Other national estimates displaying the development of physical activity among adults were not available for all the Nordic countries. Only one national survey has been conducted in Norway after year 2000 where objectively measured data on physical activity have been obtained. The population estimates in this survey is therefore not comparable with the self-reported data collected in NORMO. Estimates of physical activity from the most recent survey in Iceland were not available to compare with because data analyses have not been finalised. Finally, questionnaires and definitions of physical activity used in the Nordic surveys differ from what have been used in NORMO. In Denmark, the same questionnaire (NPAQ) was used as in NORMO, which makes the national estimates highly comparable with NORMO data.

The other national estimates show the highest proportion of inactive to be reported in Finland. This is in contrast to NORMO data where Finland is the country with the lowest proportion of inactive. Population levels and rankings of the proportion of inactive in the Nordic countries differ between other national estimates and NORMO data. The proportion of inactive is higher in the Nordic countries according to other national estimates compared with NORMO data, except in Denmark where the proportion of inactive is lower.

Other national estimates from Denmark and Sweden are comparable with NORMO data as the proportion of inactive has not changed in recent years. But other national estimates show a decline in the proportion of inactive in Finland while no change was found with NORMO data.

In summary, the recent development of physical activity in some of the Nordic countries according to other national estimates is in agreement with NORMO data. However,

the population levels for physical activity in the Nordic countries differ between other national estimates and NORMO data suggesting differences in the representativeness of the samples and the assessment methods and definitions of physical activity used.

### Sedentary behaviour

Only few other comparable national estimates for recreational screen time were available from the Nordic countries. Other national estimates show lower population levels of recreational screen time compared with NORMO data (Table 57). Other national estimates show in accordance with NORMO data an upward tendency in recreational screen time in Finland although the magnitude of the increase was smaller. The development in Denmark was opposite with other national estimates than with NORMO data. Other national estimates show a decrease in recreational screen time in Denmark whereas NORMO data show an increase.

**Table 57: Population levels and the development in sedentary behaviour among *adults* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden		Iceland		Norway
	2010	2011–2013	2007	2012	2011	2014	2007	2012	2008–2009
	(18–75 y)	(18–65 y)	(25–74 y)		(16–84 y)		(18–79 y)		(20–85 y)
Mean recreational screen time (h/d)	3.9	3.6	2.9	3.1	N/A	N/A	N/A	N/A	2.3

Note: N/A: Not available.

No conclusive remarks were made on sedentary behaviour because only few other comparable national estimates from the Nordic countries were available.

### 6.3.3 Evaluation of Goal 2011 and Vision 2021 in the Nordic Plan of Action among adults

Goal 2011 in the Nordic Plan of Action states that the temporal trend, where an increasing proportion of adults are physically inactive has been brought to a halt and at best reversed (Appendix C). The increase in the proportion of inactive has come to a halt among adults in the Nordic region between 2011 and 2014 because no change was found in the five Nordic countries. This may be regarded as the first step in fulfilling the common Nordic ambition of increased physical activity in the general population. Nevertheless, Goal 2011 may not be considered to be fulfilled among adults because the proportions of highly inactive and/or with high recreational screen time increased in the

Nordic region and in Denmark, Finland and Iceland. These findings indicate that the lifestyle has become more inactive and sedentary in recent years in the Nordic countries even if the proportion of highly active also has increased.

Vision 2021 states that at least 75% of adults in the Nordic region should be physically active, i.e. they should meet the current physical activity recommendations. In 2014, 66% of the adults in the Nordic region were physically active. Hence, Vision 2021 is currently not fulfilled, but may be possible to fulfill if the level of physical activity increases in the next decade. Finland and Sweden are close to meet the target population level in Vision 2021 while Denmark and Iceland have a longer way to go, and Norway is still far away (Table 37).

#### **6.3.4 Social inequality**

Goal 2011 may be regarded as fulfilled (Appendix C), because the social difference in physical activity (inactive) has not deepened further among adults in the Nordic region from 2011 to 2014. The development from 2011 to 2014 do, however, not support decreasing social inequality in physical activity in all the Nordic countries because the social difference increased slightly in Sweden. Public health concerns may also be raised on the increasing proportion of highly inactive among the medium and high educated in the Nordic region.

Vision 2021 emphasizes that the social difference in physical activity should decrease and be at most 20%. Vision 2021 may not be regarded as fulfilled because the social difference in physical activity did not change and is currently 22%. Still, it seems realistic to fulfill Vision 2021 during a seven year period taking the current population level and the development into consideration. At present, Denmark and Finland fulfill Vision 2021 while Sweden, Iceland and Norway do not because of increasing social inequality (Sweden) and/or large social differences in physical activity (Sweden, Iceland, Norway). Iceland and Norway in particular are still far away from fulfilling Vision 2021.

#### **6.3.5 Children**

There were no changes between 2011 and 2014 in the proportions of inactive and with high recreational screen time among children in the Nordic region. No change or a decrease was also observed in the five Nordic countries. This indicates that level of physical activity and sedentary behaviour has not changed from 2011 to 2014 among children in the Nordic countries. These findings are promising, but the proportion of inactive children in the Nordic region (59%) is still much too high if the common Nordic ambition about all children being

physically active in 2021 is going to be fulfilled. Further public health initiatives to increase physical activity in children are therefore needed in the Nordic countries.

In the Nordic region, the proportions of inactive and with high recreational screen time did not change or decreased between 2011 and 2014 in both genders and in all (parental) educational groups. The proportions of highly inactive and with high recreational screen time decreased in girls. These findings are encouraging in the effort to reduce physical inactivity and sedentary time among children.

The social difference in physical activity (inactive) did not change from 2011 to 2014 among children in the Nordic region. The decreasing social difference in sedentary behaviour is promising because this was due to a non-significant decrease among children in the low (parental) education group.

### 6.3.6 Comparison with other national estimates from the Nordic countries among children

#### Physical activity

Table 58 shows the population levels and the recent development in physical activity among children in the Nordic countries according to other national estimates. The population levels and the development from 2005 to 2014 according to other national estimates will be compared with NORMO data despite some differences in participation rates, sample sizes, persons who responded the questionnaire, survey periods, age groups and assessment methods used. These differences may be crucial for some of the differences found. Objectively measured physical activity data have been obtained in Norway; the level of physical activity is therefore not comparable with the self-reported NORMO data. In Denmark, the same questionnaire (NPAQ) was used in another national survey as in NORMO. This makes population estimates highly comparable with NORMO data.

**Table 58: Population levels and the development in physical activity among *children* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden		Iceland		Norway	
	2010	2011– 2013	2005– 2006	2009– 2010	2009– 2010	2013– 2014	2009– 2010	2013– 2014	2005– 2006 <sup>#</sup>	2011 <sup>#</sup>
	(9–17 y)	(7–12 y)	(11 y)		(11 y)		(11 y)		(9 y)	
Inactive(%)	56.8	61.1	57.0	68.0	82.0	82.8	79.0	73.8	16.6	22.0
Active(%)	43.2	38.9	43.0	32.0	18.0	17.2	21.0	26.2	83.4	78.0

Note: N/A: Not available.

<sup>#</sup>Measured data (accelerometri).



Other national estimates show the highest proportion of inactive in Sweden. This is in line with NORMO data. In contrast to this finding, population levels and ranking of the other Nordic countries differ substantially between other national estimates and NORMO data. Other national estimates show a much higher proportion of inactive in Finland, Sweden and Iceland than in NORMO while similar results were found in Denmark.

Other national estimates and NORMO data show a similar development of physical activity (inactive) in Denmark (upward trend), Sweden and Iceland (no change), but not in Finland and Norway. Other national estimates show an increase in the proportion of inactive in Finland and Norway in contrast to NORMO data that displayed no change or a decrease.

Other national estimates from Finland, Sweden and Iceland are derived from the WHO HBSC study (Currie *et al.* 2008; Currie *et al.* 2012; Inchley *et al.* 2016). A much higher proportion of inactive are observed in HBSC than in NORMO and the development according to the HBSC studies indicate an increase in the proportion of inactive in Finland. These differences could be explained by different survey periods (HBSC: 2005–2010 vs. NORMO: 2011–2014), age groups (HBSC: 11 y vs. NORMO: 7–12 y), persons who responded the questionnaires (HBSC: school child vs. NORMO: parent), and questionnaire used to assess physical activity. The importance of the survey period studied may be highlighted by using Sweden as an example. According to the HBSC studies, the proportion of inactive increased in Sweden from 2005 to 2010 (data not shown) followed by no change between 2010 and 2014. Other national estimates from Finland and Norway cover the time period from 2005 to 2011 and from Denmark, Sweden and Iceland the time period from 2010 to 2014.

In summary, the population levels and the development of physical activity according to other national estimates are not in line with NORMO data. This could be due to differences in survey periods, age groups, persons who responded the questionnaires, and assessment methods.

### **Sedentary behaviour**

Other comparable national estimates that document the population levels and the most recent development in recreational screen time in the Nordic countries are scarce (Table 59).

**Table 59: Population levels and the development in sedentary behaviour among *children* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden		Iceland		Norway	
	2010	2011– 2013	2005– 2006	2009– 2010	2009– 2010	2013– 2014	2005– 2006	2009– 2010	2005– 2006	2011
	(9–17 y)	(7–12 y)	(11 y)		(11 y)		(11 y)		(9 y)	
Mean recreational screen time (h/d)	3.2	2.9	N/A	N/A	3.3	3.7	N/A	N/A	N/A	N/A

Note: N/A: Not available.

Other comparable national estimates were only available from Denmark and Sweden. Other national estimates were not in line with NORMO data for neither Denmark nor Sweden. The population level of recreational screen time was lower in Denmark and higher in Sweden when comparing other national estimates with NORMO data. Moreover, other national estimates show an opposite development in Denmark and Sweden compared with NORMO data, i.e. mean recreational screen time decreases in Denmark and increases in Sweden according to other national estimates whereas NORMO data showed an increase in Denmark and a decrease in Sweden.

Too few other national estimates from the Nordic countries were available on sedentary behaviour to make meaningful comparison with NORMO data.

### **6.3.7 Evaluation of Goal 2011 and Vision 2021 in the Nordic Plan of Action among children**

Goal 2011 and Vision 2021 in the Nordic Plan of Action for physical activity were almost similar for children and adults (Appendix C).

Goal 2011 in the Nordic Plan of Action has been fulfilled among children because the proportions of inactive and with high recreational screen time did not change or even tended to decrease in the Nordic region. The Nordic countries should therefore aim at reducing the proportion of inactive in order to fulfill Vision 2021.

Vision 2021 states that all children should be physically active for at least one hour per day of moderate to vigorous intensity. Vision 2021 does not seem realistic to fulfill taking the current population level and the development in the Nordic countries into consideration. In 2014, it was more common to be physically inactive than active among children in the Nordic region and in particular Sweden, Norway and Denmark are far away from fulfilling Vision 2021 (Table 48).

#### **6.3.8**     *Social inequality*

Goal 2011 states that the social difference in physical activity (inactive) should not have deepened further and at best have been reduced. The social difference in physical activity did not change among children in the Nordic region from 2011 to 2014. Goal 2011 may therefore be regarded as fulfilled.

Vision 2021 states that the social difference in physical activity should decrease and be at most 20% between different social groups. Vision 2021 may currently be regarded as fulfilled among children in the Nordic region with no change from 2011 to 2014 and a small social difference in physical activity. Still, the high proportion of inactive children in all social groups needs to be reversed.

## 7. Overweight and obesity

Overweight and obesity are a major public health problem worldwide because of the associated increased risk of non-communicable diseases as cardiovascular diseases, type 2 diabetes and several types of cancers and higher all-cause mortality (WHO 2000, NNR 2012, Global BMI Mortality Collaboration 2016). The prevalence of overweight or obesity (OW/OB) and obesity (OB) have been chosen as key variables for weight status in this chapter where the prevalence and the development from 2011 to 2014 in the Nordic countries are presented. Data on the prevalence and the development from 2011 to 2014 in OW/OB and OB according to age and education in each of the five Nordic countries are commented in this chapter, but data are not tabulated and only significant findings of the development from 2011 to 2014 will be shown in the text.

When comparing OW/OB and OB between the Nordic countries, only countries where it is possible to identify one or more countries with the highest and/or lowest OW/OB and OB prevalence will be commented in the key findings below.

### 7.1 Key findings

#### 7.1.1 Adults

- In 2014, almost one in two adults were overweight or obese and one in eight were obese in the Nordic region. The prevalence of OW/OB and OB was higher in men than in women (55.9% vs. 37.3%, and 14.2% vs. 11.1%). The lowest prevalence of OB was observed in Sweden and the highest prevalence of OW/OB and OB was observed in Iceland.
- In the Nordic region, the prevalence of OW/OB did not change among adults between 2011 and 2014. No change was also found when gender, age and education were analysed. But the prevalence of OB increased from 11.4% to 12.7% among adults indicating that the OB prevalence in the Nordic region is not

levelling off.<sup>7</sup> The OB prevalence increased in women, 25–44- and 45–65-y-olds and among the high educated, but decreased in 18–24-y-olds.

- In the Nordic region, the social differences in OW/OB and OB were large in 2014, but decreased between 2011 and 2014.

### 7.1.2 Children

- In 2014, more than one in seven children were overweight or obese and 3.2% were obese in the Nordic region. The prevalence of OW/OB and OB did not differ between genders.
- The prevalence of OW/OB and OB did not change among children between 2011 and 2014 indicating that the OW/OB and OB prevalence in the Nordic region is on a plateau. Also the prevalence of OB did not change from 2011 to 2014 when gender and (parental) education were analysed. However, the prevalence of OW/OB increased from 2011 to 2014 in girls and in children with a high educated parent.
- In the Nordic region, the social difference in OW/OB was large in 2014, but decreased from 2011 to 2014.

### 7.1.3 Conclusions

Data indicate that the OW/OB and OB prevalence among children in the Nordic region has come to a halt, even if the development of OW/OB was not favorable among girls. The OB prevalence among adults in the Nordic region is however not levelling off because OB increased between 2011 and 2014 in all adults and women, but not in men. Goal 2011 in the Nordic Plan of Action has therefore been fulfilled among children, but not among adults. Data also indicate that social differences in OW/OB and OB were large among adults and children, albeit social inequality in OW/OB and OB decreased between 2011 and 2014.

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<sup>7</sup> Levelling off implies that an increase was followed by no change.

## 7.2 Results

### 7.2.1 Adults

In 2014, mean BMI was 25.3 kg/m<sup>2</sup> among adults in the Nordic region which is above the cut-off point for overweight. Results showed that almost one in two adults were overweight or obese and one in eight were obese in 2014 in the Nordic region. Ranking of the prevalence of OW/OB and OB among adults in the five Nordic countries is shown in Table 60. The prevalence of OW/OB and OB was higher in Iceland than in the other Nordic countries. Moreover, the prevalence of OB was lower in Sweden than in the other Nordic countries.

**Table 60: Ranking from lowest to highest prevalence of OW/OB and OB among *adults* in the five Nordic countries. NORMO 2014**

Country	OW/OB (%)	Country	OB (%)
Sweden	44.8	Sweden	10.1
Denmark	47.3	Norway	13.3
Norway	47.5	Finland	14.0
Finland	48.1	Denmark	14.8
Iceland	59.6	Iceland	21.0

Table 61 shows the population levels and the development in mean BMI and the OW/OB and OB prevalence among adults in the Nordic countries.

Between 2011 and 2014, an increase in mean BMI was found in the Nordic region and in Iceland and Norway. The prevalence of OB increased from 2011 to 2014 in the Nordic region while no change was observed for OW/OB. When the development in each the five Nordic countries was examined, an increase in OB prevalence was found in Iceland and Norway.

**Table 61: Mean BMI and the prevalence of OW/OB and OB (95% CI) among *adults* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=2,158)	2014 (n=1,975)	2011 (n=1,980)	2014 (n=1,696)	2011 (n=1,837)	2014 (n=1,761)	2011 (n=1,942)	2014 (n=1,939)	2011 (n=1,033)	2014 (n=1,015)	2011 (n=8,950)	2014 (n=8,386)
BMI (kg/m <sup>2</sup> )	25.3 (25.1;25.5)	25.5 (25.3;25.7)	25.5 (25.3;25.7)	25.5 (25.3;25.8)	25.0 (24.8;25.2)	24.9 (24.7;25.1)	26.3 (26.1;26.5)	26.7** (26.5;26.9)	25.0 (24.7;25.2)	25.5** (25.2;25.8)	25.2 (25.1;25.3)	25.3* (25.2;25.4)
OW/OB (%)	46.5 (44.4;48.6)	47.3 (45.1;49.5)	48.1 (45.9;50.3)	48.1 (45.7;50.4)	45.4 (43.1;47.7)	44.8 (42.4;47.1)	56.6 (54.4;58.8)	59.6~ (57.4;61.8)	46.6 (43.6;49.6)	47.5 (44.4;50.6)	46.6 (45.6;47.6)	46.7 (45.7;47.8)
OB (%)	12.8 (11.4;14.2)	14.8~ (13.3;16.4)	12.3 (10.8;13.7)	14.0 (12.4;15.7)	10.9 (9.5;12.3)	10.1 (8.7;11.5)	17.7 (16.0;19.4)	21.0** (19.2;22.8)	9.1 (7.4;10.9)	13.3** (11.2;15.4)	11.4 (10.7;12.0)	12.7** (12.0;13.4)

Note: ~ p<0.10, \*p<0.05, \*\*p<0.01: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

### 7.2.2 Gender

In 2014, the prevalence of OW/OB was higher in men than in women in the Nordic region (55.9% vs. 37.3%) and in the five Nordic countries (Table 62 and 63). When differences in OB prevalence between genders was analysed, a higher prevalence was found in men than in women in the Nordic region (14.2% vs. 11.1%) and in Sweden and Finland.

Between 2011 and 2014, mean BMI increased in women in the Nordic region and in women in Iceland and Norway. No change was found in mean BMI in men in the Nordic region and in men in each of the five Nordic countries.

When analysing the development of OW/OB and OB from 2011 to 2014 according to gender, data showed an increase in the prevalence of OB in women in the Nordic region while no change was found for OW/OB. Data in each of the five Nordic countries showed that the prevalence of OW/OB increased in women in Iceland and the prevalence of OB increased in women in Denmark, Iceland and Norway. No changes were detected in the OW/OB or OB prevalence in men in the Nordic region between 2011 and 2014 and in men in each of the five Nordic countries.



**Table 62: Mean BMI and the prevalence of OW/OB and OB (95% CI) among *men* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011	2014	2011	2014	2011	2014	2011	2014	2011	2014	2011	2014
	(n=1,010)	(n=973)	(n=917)	(n=753)	(n=874)	(n=822)	(n=921)	(n=887)	(n=505)	(n=471)	(n=4,227)	(n=3,906)
BMI (kg/m <sup>2</sup> )	26.1 (25.8;26.3)	26.1 (25.9;26.4)	26.3 (26.1;26.6)	26.6 (26.2;26.9)	25.9 (25.6;26.2)	25.8 (25.5;26.0)	27.0 (26.8;27.3)	27.1 (26.8;27.4)	25.7 (25.4;26.0)	26.2 <sup>~</sup> (25.8;26.6)	26.0 (25.9;26.1)	26.1 (26.0;26.2)
OW/OB (%)	56.1 (53.0;59.2)	55.9 (52.8;59.1)	58.3 (55.1;61.5)	60.2 (56.7;63.7)	55.3 (52.0;58.6)	53.0 (49.6;56.4)	66.0 (62.9;69.1)	65.8 (62.7;68.9)	56.1 (51.8;60.4)	56.0 (51.6;60.5)	56.4 (54.9;57.9)	55.9 (54.3;57.4)
OB (%)	14.3 (12.2;16.5)	14.4 (12.2;16.7)	14.2 (12.0;16.5)	17.4 <sup>~</sup> (14.7;20.2)	13.0 (10.7;15.2)	12.4 (10.2;14.7)	20.6 (18.0;23.2)	21.1 (18.4;23.8)	10.1 (7.5;12.7)	13.4 (10.4;16.5)	13.0 (12.0;14.1)	14.2 (13.1;15.3)

Note: <sup>~</sup> p<0.10: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

**Table 63: Mean BMI and the prevalence of OW/OB and OB (95% CI) among *women* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011	2014	2011	2014	2011	2014	2011	2014	2011	2014	2011	2014
	(n=1,148)	(n=1,001)	(n=1,063)	(n=943)	(n=963)	(n=939)	(n=1,021)	(n=1,052)	(n=528)	(n=544)	(n=4,723)	(n=4,479)
BMI (kg/m <sup>2</sup> )	24.5 (24.2;24.7)	24.8 (24.5;25.1)	24.7 (24.4;24.9)	24.6 (24.3;24.8)	24.1 (23.9;24.4)	24.0 (23.8;24.3)	25.5 (25.2;25.8)	26.3*** (26.0;26.6)	24.1 (23.8;24.5)	24.9** (24.4;25.3)	24.3 (24.2;24.4)	24.5* (24.4;24.6)
OW/OB (%)	36.5 (33.7;39.3)	38.3 (35.3;41.3)	38.3 (35.4;41.2)	36.6 (33.5;39.7)	35.2 (32.2;38.2)	36.0 (32.9;39.1)	46.8 (43.7;49.8)	53.1** (50.1;56.1)	36.5 (32.4;40.6)	38.7 (34.6;42.8)	36.6 (35.2;37.9)	37.3 (35.9;38.8)
OB (%)	11.3 (9.4; 13.1)	15.2** (13.0;17.4)	10.4 (8.6;12.2)	10.8 (8.8;12.8)	8.8 (7.0;10.6)	7.5 (5.8;9.2)	14.6 (12.4;16.7)	21.0*** (18.5;23.4)	8.1 (5.8;10.4)	13.2** (10.3;16.1)	9.6 (8.8;10.5)	11.1* (10.2;12.0)

Note: \* p<0.05, \*\* p<0.01, \*\*\* p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

®Weighted according to population size in the five Nordic countries.

### 7.2.3 Age

In 2014, the prevalence of OW/OB and OB increased across age groups in the Nordic region (Table 64). The increased prevalence across age groups was found in all the Nordic countries, except in Norway.

**Table 64: Mean BMI and the prevalence of OW/OB and OB (95% CI) among adults according to age in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	18–24 y		25–44 y		45–65 y	
	2011 (n=1,018)	2014 (n=825)	2011 (n=3,333)	2014 (n=3,021)	2011 (n=4,599)	2014 (n=4,540)
BMI (kg/m <sup>2</sup> )	23.5 (23.2;23.7)	23.2 (23.0;23.4)	25.0 (24.8;25.1)	25.2* (25.1;25.4)	25.9 (25.8;26.0)	26.1* (26.0;26.2)
OW/OB (%)	26.8 (24.1;29.5)	24.4 (21.5;27.2)	43.7 (42.0;45.4)	44.5 (42.7;46.3)	55.5 (54.1;57.0)	56.0 (54.6;57.5)
OB (%)	6.6 (5.1;8.6)	3.8* (2.5;5.0)	10.5 (9.5;11.5)	12.4* (11.2;13.6)	13.7 (12.7;14.7)	15.8** (14.7;16.9)

Note: \*p<0.05, \*\*p<0.01: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.  
<sup>@</sup>Weighted according to population size in the five Nordic countries.

Mean BMI increased in 25–44- and 45–65-y-olds from 2011 to 2014 in the Nordic region. Data in each of the five Nordic countries showed that mean BMI decreased in 18–24-y-olds in Denmark and increased in 18–24-y-olds in Iceland. Furthermore, mean BMI increased in 25–44-y-olds in Norway and in 45–65-y-olds in Denmark.

No change was found in the prevalence of OW/OB in the three age groups between 2011 and 2014 in the Nordic region. However, the prevalence of OB decreased almost three percentage points in 18–24-y-olds and increased two percentage points in 25–44- and 45–65-y-olds (Table 64).

Between 2011 and 2014, data in each of the five Nordic countries revealed an OW/OB decrease in 18–24-y-olds in Denmark (from 32.4% to 23.9%) and an OB decrease in 18–24-y-olds in Sweden (from 6.3% to 1.7%) and Finland (from 8.5% to 3.4%). Moreover, OB prevalence increased in 25–44-y-olds in Iceland (from 16.3% to 21.8%) and Norway (from 8.9% to 15.9%). Finally, OW/OB and OB prevalence increased in 45–65-y-olds in Denmark (OW/OB: from 51.6% to 56.3% and OB: from 14.0% to 17.5%). Thus, the prevalence of OW/OB and/or OB appears to decrease in 18–24-y-olds and to increase in 25–44- and 45–65-y-olds in the Nordic countries.

### 7.2.4 Education

In 2014, an inverse social gradient was found in OW/OB among adults in the Nordic region and in Sweden, i.e. the OW/OB prevalence decrease with increasing level of education (Table 65). In Finland and Norway, the prevalence of OW/OB was higher among the low educated than among the high educated, while in Denmark the prevalence of OW/OB was higher among the low and medium educated than among the high educated. There was no difference in OW/OB prevalence across education groups in Iceland. In addition, the prevalence of OB was higher among the low and medium educated than among the high educated in the Nordic region and in Denmark, Sweden and Iceland. The prevalence of OB did not differ between education groups in Finland and Norway. Hence, a lower prevalence of OW/OB and/or OB was found with increasing level of education among adults in the Nordic countries in 2014.

**Table 65: Mean BMI and the prevalence of OW/OB and OB (95% CI) among adults according to education in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=1,410)	2014 (n=1,034)	2011 (n=3,898)	2014 (n=3,066)	2011 (n=3,609)	2014 (n=4,270)
BMI (kg/m <sup>2</sup> )	25.7 (25.5;25.9)	25.9 (25.6;26.2)	25.5 (25.3;25.6)	25.5 (25.3;25.6)	24.6 (24.5;24.7)	24.7 (24.6;24.8)
OW/OB (%)	54.9 (52.0;57.8)	53.3 (49.7;56.8)	48.9 (47.3;50.5)	48.6 (46.8;50.3)	39.6 (38.1;41.2)	40.6 (39.1;42.0)
OB (%)	15.4 (13.3;17.6)	15.9 (13.3;18.5)	13.1 (12.1;14.2)	13.8 (12.6;15.0)	8.0 (7.2;8.9)	9.8** (9.0;10.7)
Relative difference OW/OB <sup>#</sup> (%)	–	–	–	–	–38	–31
Relative difference OB <sup>#</sup> (%)	–	–	–	–	–93	–61

Note: \*\* p<0.01: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

In 2014, large social differences ( $\geq 20\%$ ) were found in OW/OB and OB in the Nordic region (Table 65). When analysing each of the five Nordic countries, large social differences in OW/OB were seen in Sweden and Norway, moderate differences (10–20%) were observed in Denmark and Finland and just a small difference ( $\leq 10\%$ ) in Iceland. As regards

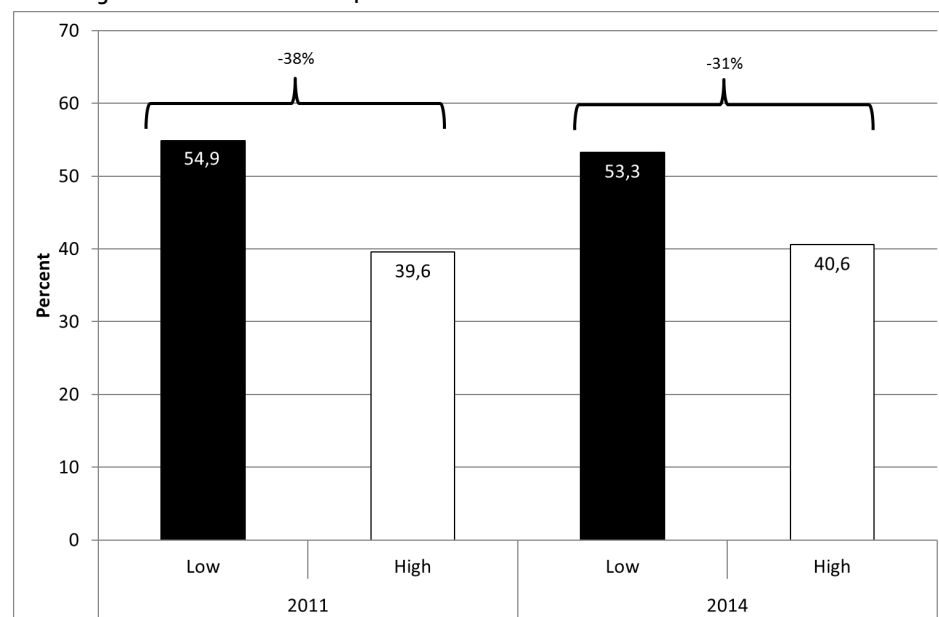
OB, large social differences were observed in Denmark, Sweden and Iceland while moderate and small differences were seen in Finland and Norway, respectively.

Between 2011 and 2014, no change was found in mean BMI according to education in the Nordic region. Analyses in each of the five Nordic countries showed that mean BMI increased among the low and high educated in Norway and among the medium educated in Iceland.

The prevalence of OB increased two percentage points from 2011 to 2014 among the high educated in the Nordic region while no change occurred among the low and medium educated. The prevalence of OW/OB did not change between 2011 and 2014 in neither of the education groups.

Between 2011 and 2014, data showed an increase in the OW/OB and OB prevalence among the medium educated in Iceland (OW/OB: from 55.6% to 61.2% and OB: from 16.0% to 22.1%). Furthermore, a decrease was found in the OB prevalence among the high educated in Sweden (from 7.9% to 5.5%), whereas OB increased among the high educated in Finland (7.4% to 13.4%) and Norway (from 6.8% to 12.8%). Thus, an increase in the OW/OB and/or OB prevalence was found among the medium and/or high educated in Finland, Iceland and Norway whereas a decrease was found in Sweden.

**Figure 7: The development from 2011 to 2014 of the social difference in OW/OB among adults in the Nordic region. NORMO 2011 and 2014**



The social difference in OW/OB (Figure 7) and OB decreased from 2011 to 2014 among adults in the Nordic region and in Finland. In the Nordic region, the decreasing social inequality in OB was mainly caused by an increase in the OB prevalence in the high education group while in Finland it was caused by a borderline decrease in the low education group and an increase in the high education group. In Denmark, the social difference in OW/OB decreased and increased for OB. In Norway an opposite pattern was observed, i.e. the social difference in OW/OB increased whereas the difference in OB decreased slightly. Finally, the social difference in OW/OB did not change in Sweden and Iceland, while the social difference in OB increased considerably in Sweden and decreased slightly in Iceland. Hence, changes in social inequality in OW/OB and OB were not similar in the five Nordic countries.

### 7.2.5 Children

In 2014, mean BMI was 17.1 kg/m<sup>2</sup> among children in the Nordic region. Results showed that more than one in seven children were overweight or obese and 3.2% were obese in 2014 in the Nordic region. Ranking of the prevalence of OW/OB and OB among children in the five Nordic countries is shown in Table 66. The prevalence of OW/OB was lower in Denmark than in Norway, Sweden and Iceland, while OB prevalence did not differ between the Nordic countries.

**Table 66: Ranking from lowest to highest prevalence of OW/OB and OB among children in the five Nordic countries. NORMO 2014**

Country	OW/OB (%)	Country	OB (%)
Denmark	11.6	Finland	2.3
Finland	15.6	Norway	3.0
Norway	16.7	Sweden	3.2
Sweden	16.8	Iceland	3.2
Iceland	20.0	Denmark	4.2

Table 67 shows the population levels and the development from 2011 to 2014 in mean BMI and the OW/OB and OB prevalence among children in the Nordic countries. Between 2011 and 2014, mean BMI and the prevalence of OW/OB and OB did not change among children in the Nordic region and in each of the five Nordic countries.

Table 67: Mean BMI and the prevalence of OW/OB and OB (95% CI) among *children* in the Nordic countries. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region@	
	2011	2014	2011	2014	2011	2014	2011	2014	2011	2014	2011	2014
	(n=559)	(n=531)	(n=486)	(n=470)	(n=453)	(n=468)	(n=430)	(n=399)	(n=291)	(n=300)	(n=2,219)	(n=2,168)
BMI (kg/m <sup>2</sup> )	17.1 (16.9;17.4)	16.9 (16.6;17.2)	17.3 (17.1;17.6)	17.2 (16.9;17.4)	17.3 (17.1;17.6)	17.3 (17.0;17.5)	17.5 (17.2;17.8)	17.4 (17.1;17.6)	17.2 (16.9;17.5)	17.1 (16.7;17.4)	17.3 (17.1;17.4)	17.1 (17.0;17.3)
OW/OB (%)	12.9 (10.1;15.7)	11.6 (8.9;14.3)	17.2 (13.9;20.6)	15.6 (12.3;18.9)	14.8 (11.5;18.1)	16.8 (13.4;20.2)	20.5 (16.7;24.4)	20.0 (16.1;23.9)	15.7 (11.6;19.9)	16.7 (12.6;20.9)	15.1 (13.7;16.6)	15.4 (13.9;16.9)
OB (%)	2.4 (1.1;3.7)	4.2 <sup>~</sup> (2.5;5.9)	3.6 (1.9;5.3)	2.3 (1.0;3.7)	2.1 (0.8;3.5)	3.2 (1.6;4.8)	3.7 (1.9;5.5)	3.2 (1.5;5.0)	4.7 (2.3;7.1)	3.0 (1.1;4.9)	3.0 (2.3;3.7)	3.2 (2.5;3.9)

Note: <sup>~</sup> p<0.10: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

@Weighted according to population size in the five Nordic countries.

### 7.2.6 Gender

In 2014, the prevalence of OW/OB and OB did not differ between genders in the Nordic region and in each of the five Nordic countries.

Between 2011 and 2014, the prevalence of OW/OB increased in girls in the Nordic region while no change was found in boys (Table 68 and 69).

No changes were detected in mean BMI and in the prevalence of OB in boys and girls in the Nordic region. When analysing the development according to gender in each of the five Nordic countries, the prevalence of OB increased in girls in Denmark. Although no significance was established, prevalence data for OW/OB in the five Nordic countries suggest an upward tendency in girls from 2011 to 2014 and a downward tendency in boys.

**Table 68: Mean BMI and the prevalence of OW/OB and OB (95% CI) among boys in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=292)	2014 (n=265)	2011 (n=242)	2014 (n=227)	2011 (n=249)	2014 (n=245)	2011 (n=207)	2014 (n=198)	2011 (n=146)	2014 (n=150)	2011 (n=1,136)	2014 (n=1,085)
BMI (kg/m <sup>2</sup> )	17.3 (16.9;17.6)	17.1 (16.7;17.5)	17.4 (17.0;17.7)	17.2 (16.8;17.5)	17.5 (17.1;17.8)	17.4 (17.0;17.7)	17.5 (17.1;18.0)	17.6 (17.2;18.0)	17.6 (17.1;18.1)	17.4 (17.0;17.9)	17.4 (17.3;17.6)	17.3 (17.1;17.5)
OW/ OB (%)	15.0 (10.9;19.1)	11.5 (7.7;15.4)	18.1 (13.3;23.0)	13.2 (8.8;17.6)	17.9 (13.1;22.7)	15.8 (11.2;20.3)	22.2 (16.5;27.9)	20.5 (14.9;26.2)	20.2 (13.7;26.6)	20.2 (13.8;26.6)	17.7 (15.6;19.9)	15.3 (13.2;17.3)
OB(%)	3.1 (1.1;5.1)	3.2 (1.1;5.3)	3.9 (1.4;6.3)	1.8 (0.1;3.6)	2.2 (0.4;4.0)	2.7 (0.7;4.7)	2.4 (0.3;4.5)	4.4 (1.6;7.3)	6.5 (2.5;10.4)	2.7 (0.1;5.2)	3.6 (2.5;4.6)	2.7 (1.7;3.6)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 69: Mean BMI and the prevalence of OW/OB and OB (95% CI) among girls in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=267)	2014 (n=266)	2011 (n=244)	2014 (n=243)	2011 (n=204)	2014 (n=223)	2011 (n=223)	2014 (n=201)	2011 (n=145)	2014 (n=150)	2011 (n=1,083)	2014 (n=1,083)
BMI (kg/m <sup>2</sup> )	17.0 (16.7;17.4)	16.7 (16.3;17.0)	17.3 (16.9;17.6)	17.2 (16.8;17.5)	17.2 (16.8;17.5)	17.2 (16.8;17.6)	17.5 (17.1;18.0)	17.1 (16.8;17.5)	16.8 (16.4;17.2)	16.7 (16.2;17.2)	17.1 (16.9;17.2)	17.0 (16.8;17.2)
OW/OB (%)	10.8 (7.0;14.5)	11.6 (7.8;15.4)	16.2 (11.6;20.8)	17.9 (13.1;22.7)	11.5 (7.0;16.0)	17.9 <sup>-</sup> (12.8;22.9)	18.8 (13.7;23.9)	19.4 (14.0;24.9)	10.9 (5.9;15.9)	13.4 (8.1;18.7)	12.4 (10.4;14.4)	15.6* (13.5;17.7)
OB (%)	1.6 (0.1;3.2)	5.3* (2.6;7.9)	3.3 (1.1;5.5)	2.8 (0.7;4.8)	2.1 (0.1;4.0)	3.7 (1.2;6.2)	5.1 (2.2;8.0)	2.1 <sup>-</sup> (0.1;4.1)	2.7 (0.1;5.3)	3.3 (0.5;6.1)	2.4 (1.5;3.3)	3.8 <sup>-</sup> (2.7;4.9)

Note: <sup>-</sup> p<0.10, \* p<0.05: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.



### 7.2.7 Parental education

In 2014, the prevalence of OW/OB was higher in children with a medium educated parent than in children with a high educated parent in the Nordic region (Table 70). Moreover, the prevalence of OB was higher in children with a low educated parent than in children with a high educated parent. There was no difference in the prevalence of OW/OB and OB across parental education groups in each of five Nordic countries, except in Denmark where a higher prevalence of OB was seen in children with a low or medium educated parent than in children with a high educated parent.

In 2014, a moderate social difference in OW/OB and a large difference in OB were found among children in the Nordic region. Social differences are only reported in the Nordic region because it was not possible to assess social inequality in OW/OB and OB in all the Nordic countries due to few participants in the group of children with a low educated parent.

When analysing the development from 2011 to 2014 in mean BMI and in the prevalence of OW/OB and OB according to parental education in the Nordic region and in each of the five Nordic countries, the only significant finding was an increase in the OW/OB prevalence in children with a high educated parent in the Nordic region (Table 70).

**Table 70: Mean BMI and the prevalence of OW/OB and OB (95% CI) among children according to parental education in the Nordic region. NORMO 2011 and 2014**

	Nordic region <sup>@</sup>					
	Low		Medium		High	
	2011 (n=152)	2014 (n=121)	2011 (n=844)	2014 (n=553)	2011 (n=1,215)	2014 (n=1,485)
BMI (kg/m <sup>2</sup> )	18.0 (17.5;18.6)	18.0 (17.2;18.8)	17.4 (17.3;17.6)	17.2 <sup>-</sup> (16.9;17.4)	16.9 (16.8;17.1)	16.9 (16.7;17.0)
OW/OB (%)	22.1 (13.3;30.9)	16.4 (8.5;24.2)	18.1 (15.5;20.6)	17.3 (14.2;20.4)	11.2 (9.4;12.9)	13.8* (12.0;15.5)
OB (%)	7.6 (2.0;13.2)	6.0 (0.9;11.0)	3.4 (2.2;4.5)	3.1 (1.7;4.4)	1.7 (1.0;2.4)	2.4 (1.7;3.2)
Relative difference OW/OB (%) <sup>#</sup>	–	–	–	–	–98	–19
Relative difference OB (%) <sup>#</sup>	–	–	–	–	–345	–148

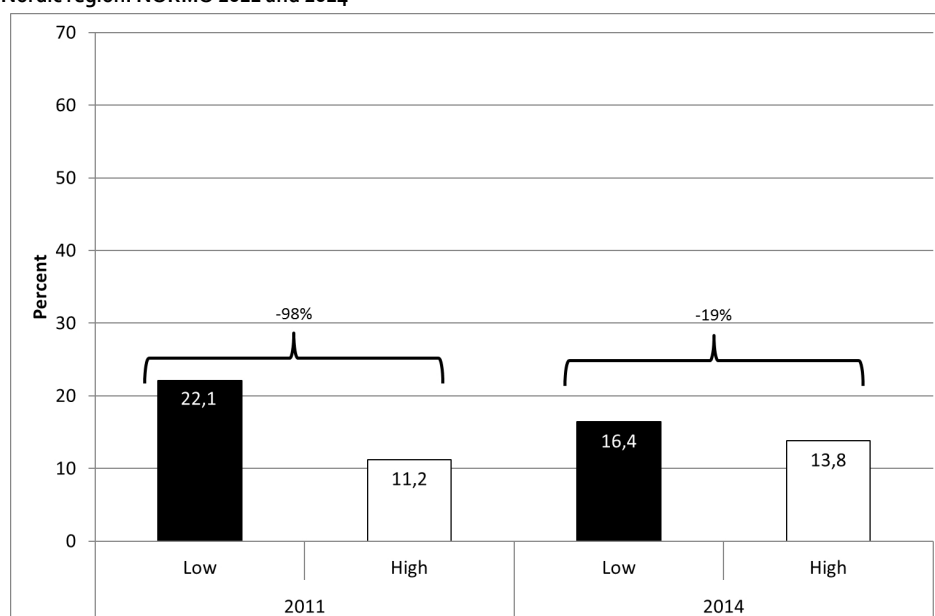
Note: \* p<0.05, <sup>-</sup> p<0.10: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

Between 2011 and 2014, the social difference in OW/OB (Figure 8) and OB decreased considerably among children in the Nordic region. The decreasing social difference in OW/OB was caused by a non-significant decrease in the OW/OB prevalence in children with a low educated parent and an increase in children with a high educated parent.

Figure 8: The development from 2011 to 2014 of the social difference in OW/OB among children in the Nordic region. NORMO 2011 and 2014



## 7.3 Discussion

### 7.3.1 Adults

Results show an increase in the prevalence of OB – from 11.4% in 2011 to 12.7% in 2014 – among adults in the Nordic region. The OB prevalence increased in Iceland and Norway and a non-significant upward tendency was found in Denmark and Finland. Hence, data indicate that the prevalence of OB among adults in the Nordic countries is not levelling off. The OB increase is worrying from a public health perspective because it corresponds to more than 200,000 additional obese adults in the Nordic region during a three year time period (from 1.8 million obese in 2011 to 2.0 million obese in 2014). The OB increase was significant among women, but not among men. This finding is in agreement with recently published data from Denmark where the development of

OW/OB and OB was reported in adults between 2005 and 2013 (Matthiessen and Stockmarr 2015).

The prevalence of OB increased in 25–44- and 45–65-y-olds in the Nordic region whereas a decrease was observed in 18–24-y-olds. Social inequality in OB also decreased. This decrease looks encouraging at first glance. However, when examining the figures more closely, it was caused by an OB increase in the high education group.

The development in the Nordic countries seems to be heading in a direction where it will be more common to be overweight or obese as an adult than being normal weight. The prevalence of OW/OB and OB is most likely underestimated in NORMO because self-reported data has been obtained (Connor Gorber *et al.* 2007), and the proportion of obese is generally higher among non-participants than participants in population surveys (Nyholm *et al.* 2008).

The most positive development was seen in Sweden because the prevalence of OB did not change and the prevalence was relative low. In contrast to Sweden, the most alarming development was observed in Iceland because of the large OB increase and the high prevalence leading to more than one in five adults being obese in Iceland. The difference observed in OB between Sweden and Iceland was most striking among women where the OB prevalence was close to three times higher in women in Iceland compared with Sweden. Iceland is the only Nordic country where it is more common to be overweight or obese as an adult than being normal weight so far.

### **7.3.2      *Comparison with other national estimates from the Nordic countries among adults***

Table 71 shows the prevalence and the recent development in OW/OB and OB among adults in the Nordic countries according to other national estimates. Despite some differences in participation rates, survey periods, age groups and how height and weight were measured, these national estimates are relevant to compare with NORMO data. Other national estimates cover the period from around year 2006 where the Nordic Plan of Action was launched up to 2014. This time period was selected because Vision 2021 in the Nordic Plan of Action was defined by use of the prevalence of OW/OB and OB at year 2006. All other national estimates are self-reported, except in Finland where measured estimates have been obtained.

**Table 71: Prevalence and the development of OW/OB and OB among *adults* in the Nordic countries according to other national estimates**

	Denmark		Finland*		Sweden		Iceland		Norway	
	2005	2013	2006	2014	2006	2014	2007	2012	2005	2012
	(16+ y)		(15–64 y)		(16–84 y)		(18–79 y)		(18–64 y)	
OW/OB (%)	44.0	47.4	47.7	50.2	46.0	49.0	60.1	63.3	45.0	46.0
OB (%)	11.4	14.1	14.3	16.3	12.0	14.0	20.1	22.2	9.0	10.0

Note: \*Measured data.

The most recent prevalence of OW/OB and OB were higher for all the Nordic countries, except for Denmark, according to other national estimates compared with NORMO data (Table 61). Part of this difference may be explained by higher participation rates and less skewed population distributions (gender, age, education) in the other national surveys. Other recent national estimates found in accordance with NORMO data the highest prevalence of OW/OB and OB among adults in Iceland, but the lowest prevalence in Norway in contrast to Sweden when NORMO data were used.

Between 2005 and 2014, other national estimates show that the Nordic countries have experienced a two to three percentage point increase in OW/OB and OB prevalence, apart from Norway where the observed increase was one percentage point. When comparing the development of OW/OB and OB in each of the five Nordic countries using other national estimates and NORMO data, changes in Denmark and Iceland are similar, but only partly comparable in Finland and Norway and not comparable in Sweden. In Finland, other national estimates show an increase in the prevalence of OW/OB while no change was observed in NORMO. Moreover, a smaller OB increase was found in Norway with other national estimates compared with NORMO data. NORMO data from Norway should be interpreted with caution due to low participation rates in both survey years. Finally, the prevalence of OW/OB and OB increased in Sweden according to other national estimates while NORMO data showed no change between survey years. Still, other recently obtained national estimates support the finding in NORMO of no change in the OW/OB prevalence in Sweden between 2011 and 2014 (data not shown). This highlights that some of the differences may be explained by the different survey periods examined. The comparisons made above underlines the importance of measuring the prevalence and the development in the same period and age groups and using the same assessment method as has been done in NORMO.

In summary, other national estimates from the Nordic countries display higher prevalence of OW/OB and OB than NORMO data, but find in agreement with NORMO data an overall OB increase over time. Thus, other national estimates from the Nordic countries support NORMO data in that the OB prevalence among adults in the Nordic countries is not levelling off.

### 7.3.3 *Evaluation of Goal 2011 and Vision 2021 in the Nordic Plan of Action among adults*

Goal 2011 in the Nordic Plan of Action was to stop the increase in the OW/OB and OB prevalence in the Nordic countries (Appendix C). Even if no change in the OW/OB prevalence was detected between 2011 and 2014, Goal 2011 has not been fulfilled because OB continues to rise in the Nordic region. This increase may especially be attributed to women where OB prevalence increased between 2011 and 2014. The development in the five Nordic countries was however not similar because the OB prevalence increased in Iceland and Norway while no change was found in Denmark, Finland and Sweden.

Vision 2021 in the Nordic Plan of Action aims to reduce OW/OB and OB with at least 30% from the prevalence at year 2006 (Table 72).

**Table 72: Target prevalence of OW/OB and OB among adults according to Vision 2021 in the Nordic Plan of Action. Target prevalence corresponds to a 30% reduction from the prevalence at year 2006**

	Denmark	Finland	Sweden	Iceland	Norway
OW/OB (%)	30.8	33.4	32.2	42.1	31.5
OB (%)	8.0	10.0	8.4	14.1	6.3

Even though this vision may not be evaluated until 2021, one has to be highly optimistic to believe that it will be fulfilled taking the current prevalence and the development into consideration. In 2014, the prevalence of OW/OB and OB was 45–60% and 10–21%, respectively, in the Nordic countries and the target prevalence in Vision 2021 is 31–42% for OW/OB and 6–14% for OB. Thus, the current prevalence of OW/OB and OB should be reduced significantly in a seven year period to reach the target prevalence in Vision 2021. None of the Nordic countries are close to meet the target prevalence of OW/OB and OB in Vision 2021, except Sweden with regard to OB.

#### 7.3.4 Social inequality

Goal 2011 states that the existing social differences in OW/OB and OB should not have deepened further and at best have been reduced (Appendix C). The social difference in OW/OB and OB decreased from 2011 to 2014 among adults in the Nordic region. Goal 2011 looks therefore to be fulfilled as social inequality in OW/OB and OB was reduced. Mixed results were found for the development of social inequality in OW/OB and OB in the five Nordic countries. Social inequality in both OW/OB and OB decreased only in Finland between 2011 and 2014.

The way Goal 2011 was fulfilled among adults in the Nordic region is not favorable from a public health point of view because it was reduced through an increase in the OB prevalence in the high education group. This means that health status has deteriorated in the high social group. It is therefore important to be aware of the changes in all social groups when the aim is to lower social inequality in health.

Vision 2021 states that social inequality in OW/OB should decrease and that the social difference in OW/OB should be at most 20%. The social difference decreased from 38% in 2011 to 31% in 2014 in the Nordic region. Thus in 2014, the social difference in OW/OB was still large among adults in the Nordic region. A large social difference in OW/OB was also seen in Sweden and Norway.

Vision 2021 is not fulfilled yet, but data suggest that the vision may be possible to fulfill. Vision 2021 should also be evaluated with the ambition of achieving better health status in all social groups and not just decrease social inequality in OW/OB. This was however not the case in the Nordic region where a non-significant OW/OB increase was found among the high educated. In Denmark and Finland, an encouraging non-significant decrease in the OW/OB prevalence was observed in the low education group. The OB prevalence also decreased non-significantly in the low education group in Finland, but not in Denmark. In Sweden and Iceland, social inequality in OW/OB did not change from 2011 to 2014, while in Norway, social inequality increased mainly due to a non-significant increase in the low education group.

#### 7.3.5 Children

Results show that the prevalence of OW/OB and OB has come to a halt between 2011 and 2014 among children in the Nordic region. This was observed in all the Nordic countries and supports the findings from other studies (Rokholm *et al.* 2010, Olds *et al.* 2011, Morgen *et al.* 2013) which show that OW/OB and OB prevalence among children in the Nordic countries is still on a plateau. Even though these findings are encouraging, a relatively high prevalence of OW/OB was observed and a halt has previously been followed by a

rise. It is therefore important to continue to obtain anthropometric population data and to draw attention to OB prevention among children in the Nordic countries.

The development from 2011 to 2014 differed between boys and girls in the Nordic region because the OW/OB prevalence increased in girls while a non-significant downward tendency was observed in boys. The different development between genders was seen in all the Nordic countries although no significance was established. These findings are in line with a recently published study analysing the development from 2005 to 2013 in OW/OB and OB among children and adolescents in Denmark (Matthiessen and Stockmarr 2015).

Social inequality in OW/OB and OB decreased considerably among children in the Nordic region. The reduced social inequality in OW/OB was caused by a non-significant OW/OB decrease in children with a low educated parent and an increase in children with a high educated parent.

### 7.3.6 Comparison with other national estimates from the Nordic countries among children

Other national estimates of the prevalence and the recent development of OW/OB and OB among children in the Nordic countries are shown in Table 73. Other national estimates differ from NORMO data in terms of participation rates, representativeness, persons who responded the questionnaire, survey periods, age groups and how height and weight were assessed, but are still useful for comparison. Other national estimates cover the time period from 2005 to 2013 in 4–17-y-olds. Estimates from Sweden and Iceland are not nationally representative and measured anthropometric estimates have been obtained in Sweden, Iceland and Norway.

**Table 73: Prevalence and the development of OW/OB and OB among children in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden*		Iceland*,#		Norway*	
	2005–2008	2011–2013	2005	2009–2010	2008	2013†	2006	2012	2008	2012
	(4–17 y)		(11 y)		(7–9 y)		(6, 9, 12, 14 y)		(8–9 y)	
OW/OB (%)	17.7	16.4	18.2	16.8	16.6	17.0	21.1	21.0	15.0	15.8
OB (%)	3.2	2.8	2.6	2.8	3.0	2.1	4.8	4.7	3.3	3.5

Note: \*Measured data.

#Only data from the Reykjavík area.

†Only data from Västra Götaland.

The prevalence of OW/OB and OB were comparable between other national estimates and NORMO data, except for OW/OB in Denmark. Other national estimates display the highest prevalence of OW/OB among children in Iceland. This is in agreement with NORMO data. The prevalence was similar in the four other countries according to other national estimates. This is in contrast to NORMO data revealing a lower prevalence of OW/OB among children in Denmark than among children in Sweden and Norway.

Other national estimates show in line with NORMO data no change in the OW/OB and OB prevalence among children in the Nordic countries during the last decade. This is also supported by results from the WHO Health Behaviour in School-aged Children (HBSC) study (Currie *et al.* 2008; Currie *et al.* 2012).

In summary, the prevalence and the development of OW/OB and OB according to other national estimates from the Nordic countries were in line with NORMO data, except for OW/OB prevalence in Denmark. Other national estimates support NORMO data in that the OW/OB and OB prevalence among children in the Nordic countries is on a plateau.

### 7.3.7 Evaluation of Goal 2011 and Vision 2021 in the Nordic Plan of Action among children

Goal 2011 and Vision 2021 in the Nordic Plan of Action for overweight and obesity were almost similar for children and adults (Appendix C).

Goal 2011 has been fulfilled among children because the prevalence of OW/OB and OB did not change between 2011 and 2014 in the Nordic region. The next step will be to reduce the prevalence of OW/OB and OB among children in the Nordic countries in order to fulfill Vision 2021. Girls may be especially relevant to target because the prevalence of OW/OB increased between 2011 and 2014.

Vision 2021 aims to reduce the OW/OB and OB prevalence with at least 50% from the prevalence at year 2006 (Table 74).

**Table 74: Target prevalence of OW/OB and OB among children according to Vision 2021 in the Nordic Plan of Action. Target prevalence corresponds to a 50% reduction from the prevalence at year 2006**

	Denmark	Finland	Sweden	Iceland	Norway
OW/OB (%)	8.9	9.1	8.3	10.6	7.5
OB (%)	1.6	1.3	1.5	2.4	1.7



In 2014, the prevalence of OW/OB and OB was 12–20% and 2–4%, respectively, among children in the five Nordic countries and the target prevalence in Vision 2021 is 8–11% for OW/OB and 1–2% for OB. Hence, the current prevalence of OW/OB and OB should almost be halved in a seven year period to reach the target prevalence in Vision 2021. This may be difficult, but it will probably be easier to fulfill Vision 2021 for OB than for OW/OB among children in the Nordic region. Denmark is close to meet the target prevalence of OW/OB in Vision 2021 while Finland, Norway and Sweden have a longer way to go, and Iceland is far away.

#### **7.3.8 Social inequality**

Goal 2011 may be regarded as fulfilled because the social difference in OW/OB and OB decreased among children in the Nordic region from 2011 to 2014.

Vision 2021 states that the social difference in OW/OB should decrease and be at most 20%. The social difference in OW/OB decreased from 98% in 2011 to 19% in 2014 in the Nordic region. Currently, Vision 2021 may be regarded as fulfilled. However, even if the social difference in OW/OB has become much smaller, social inequality in OW/OB and OB persist among children in the Nordic region. Furthermore, Vision 2021 needs to be evaluated with the ambition of achieving better health in all social groups and not just decrease social inequality in OW/OB as mentioned previously.

## 8. Smoking

Smoking is a major risk factor for many of the leading causes of premature death. Smoking increases the risk of cardiovascular diseases, stroke, lung cancer and other types of cancers. Smoking also causes a number of other chronic conditions and diseases, such as obstructive pulmonary disease, that have a substantial impact on population health and wellbeing (U.S. Department of Health and Human Services, 2014). Thus, smoking poses a major threat to health in the Nordic region.

In this chapter, population levels of smoking, i.e. the proportions of smokers and daily smokers, are reported among adults in the Nordic countries. Smoking was assessed for the first time in NORMO 2014 why it is only possible to examine population levels. The proportion of smokers is provided by summing up daily and occasional smokers. Other national estimates are used to compare the population levels and to report the most recent development of smoking in the Nordic countries.

Data on the population levels of smoking and daily smoking according to age and education in each of the five Nordic countries are commented in this chapter, but data are not tabulated.

Population levels of users of smokeless tobacco (snuff) and daily users of smokeless tobacco (snuff) are shown in Table 104 in appendix D, but data will not be commented and were not analysed statistically. Smoking was not part of the Nordic Plan of Action in 2006 (Nordic Council of Ministers 2006) why no goals and visions have been formulated for smoking in the Nordic countries.

When comparing smoking behaviour between the Nordic countries, only countries where it is possible to identify one or more countries with the highest and/or lowest proportions of smokers and daily smokers will be commented in the key findings below.

### 8.1 Key findings

- In 2014, one in five adults were smokers (i.e. daily or occasionally smokers) and one in seven were daily smokers in the Nordic region. The proportion of smokers was higher in men than in women (21.8% vs. 19.9%), while no gender difference was seen for daily smokers. The lowest proportion of smokers and daily smokers

was observed in Sweden, while the highest proportion of daily smokers was observed in Denmark.

- In the Nordic region, the proportion of smokers was higher in men than in women, while no gender difference was found for daily smokers.
- The proportion of smokers was higher in 18–24- and 25–44-y-olds than in 45–65-y-olds, whereas the proportion of daily smokers was higher in 45–65-y-olds than in 18–24-y-olds.
- An inverse social gradient was found in smoking and daily smoking, i.e. the proportions of smokers and daily smokers decreased with increasing level of education. The social differences in smoking and daily smoking were large in the Nordic countries in 2014.
- According to other national estimates the proportions of smokers and daily smokers have been declining in all the Nordic countries during the last decade.

### **8.1.1 Conclusions**

The proportions of smokers and daily smokers were 21% and 14.0%, respectively, in the Nordic region. In the Nordic countries, the proportion of smokers varied between 15–25% and the proportion of daily smokers between 9–21%. The proportion of daily smokers was higher in Denmark than in the other Nordic countries. Large social differences in smoking were found in all the Nordic countries.

## **8.2 Results**

### **8.2.1 Adults**

In 2014, one in five adults were smokers, i.e. daily or occasionally smokers, and one in seven were daily smokers in the Nordic region (Table 75). Ranking of the proportion of smokers and daily smokers in the five Nordic countries is shown in Table 76. The proportion of smokers was lower in Sweden than in the other Nordic countries and higher in Denmark than in Iceland. Moreover, the proportion of daily smokers differed between all the Nordic countries, except for Iceland and Norway where no difference was found.

**Table 75: Proportion of smokers (95% CI) among adults in the Nordic countries. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=2,006)	2014 (n=1,712)	2014 (n=1,798)	2014 (n=2,006)	2014 (n=1,057)	2014 (n=8,579)
Smokers (%)	25.3 (23.4;27.2)	24.4 (22.4;26.5)	15.4 (13.7;17.0)	22.0 (20.2;23.8)	22.2 (19.7;24.7)	20.8 (20.0;21.7)
Daily smokers <sup>#</sup> (%)	21.3 (19.5;23.1)	17.8 (16.0;19.6)	9.4 (8.1;10.8)	15.2 (13.6;16.7)	14.2 (12.1;16.3)	14.8 (14.0;15.5)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of smokers.

**Table 76: Ranking from lowest to highest proportion of smokers and daily smokers among *adults* in the five Nordic countries. NORMO 2014**

Smokers (%)		Daily smokers (%)	
Sweden	15.4	Sweden	9.4
Iceland	22.0	Norway	14.2
Norway	22.2	Iceland	15.2
Finland	24.4	Finland	17.8
Denmark	25.3	Denmark	21.3

### 8.2.2 Gender

In the Nordic region, the proportion of smokers was higher in men than in women (21.8% vs. 19.9%), while the proportion of daily smokers was similar between genders (Table 77 and 78). The proportion of smokers and daily smokers was higher in men than in women in Finland. It was the other way around in Sweden where the proportion of daily smokers was higher in women than in men.

**Table 77: Proportion of smokers (95% CI) among men in the Nordic countries. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=976)	2014 (n=753)	2014 (n=826)	2014 (n=890)	2014 (n=484)	2014 (n=3,929)
Smokers (%)	26.6 (23.9;29.4)	30.6 (27.3;33.9)	14.3 (11.9;16.7)	21.9 (19.2;24.7)	21.1 (17.4;24.7)	21.8 (20.5;23.0)
Daily smokers <sup>#</sup> (%)	22.5 (19.9;25.1)	21.5 (18.6;24.5)	7.5 (5.7;9.3)	15.3 (13.0;17.7)	12.2 (9.3;15.1)	14.7 (13.6;15.8)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of smokers.

**Table 78: Proportion of smokers (95% CI) among women in the Nordic countries. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=1,029)	2014 (n=959)	2014 (n=972)	2014 (n=1,116)	2014 (n=573)	2014 (n=4,649)
Smokers (%)	23.9 (21.3;26.5)	18.7 (16.2;21.2)	16.5 (14.1;18.8)	22.1 (19.7;24.6)	23.2 (19.8;26.7)	19.9 (18.7;21.0)
Daily smokers <sup>#</sup> (%)	20.2 (17.7;22.6)	14.4 (12.2;16.6)	11.4 (9.4;13.4)	15.0 (12.9;17.1)	16.2 (13.2;19.2)	14.8 (13.8;15.9)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of smokers.

### 8.2.3 Age

In the Nordic region, the proportion of smokers was higher in 18–24- and 25–44-y-olds than in 45–65-y-olds, whereas the proportion of daily smokers was higher in 45–65-y-olds than in 18–24-y-olds (Table 79). Analyses in each of the five Nordic countries showed that the proportion of smokers was higher in 18–24-y-olds than in 25–44- and 45–65-y-olds in Sweden and Iceland, while the proportion of smokers was higher in 25–44-y-olds than in 45–65-y-olds in Finland. Moreover, the proportion of daily smokers was higher in 18–24-y-olds than in 25–44- and 45–65-y-olds in Iceland, while the proportion of daily smokers was higher in 45–65-y-olds than in 18–24-y-olds in Norway.

**Table 79: Proportion of smokers (95% CI) among adults according to age in the Nordic region. NORMO 2014**

	Nordic region <sup>@</sup>		
	18–24 y	25–44 y	45–65 y
	2014 (n=846)	2014 (n=3,075)	2014 (n=4,658)
Smokers (%)	23.3 (20.5;26.0)	21.3 (19.9;22.8)	19.3 (18.1;20.4)
Daily smokers <sup>#</sup> (%)	12.7 (10.5;14.9)	14.2 (13.0;15.4)	15.8 (14.8;16.9)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of smokers.

### 8.2.4 Education

An inverse social gradient was found in smoking in the Nordic region and in each of the five Nordic countries, i.e. the proportions of smokers and daily smokers decreased with increasing level of education (Table 8o). Only in Norway no difference was found in the proportion of smokers between the medium and high educated. The social differences in smoking and daily smoking were large in the Nordic region and in each of the five Nordic countries.

**Table 8o: Proportion of smokers (95% CI) among adults according to education in the Nordic region. NORMO 2014**

	Nordic region <sup>@</sup>		
	Low 2014 (n=1,064)	Medium 2014 (n=3,135)	High 2014 (n=4,364)
Smokers (%)	32.3 (29.0;35.6)	21.1 (19.7;22.5)	14.7 (13.7;15.7)
Daily smokers* (%)	26.8 (23.6;29.9)	15.0 (13.8;16.2)	8.5 (7.7;9.3)
Relative difference total smokers* (%)	–	–	–120
Relative difference daily smokers* (%)	–	–	–215

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Subgroup of smokers.

<sup>\*</sup>Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

## 8.3 Discussion

The proportions of smokers and daily smokers were 20.8% and 14.8%, respectively, among adults in the Nordic region. This means that one in five adults or 3.4 million people in the Nordic countries are daily or occasional smokers.

The proportion of smokers was similar in the Nordic countries, except in Sweden where the lowest proportion was found. One of the reasons for the low proportion of smokers in Sweden, particularly in men, may be the common use of smokeless tobacco (snuff) as shown in Table 104 in appendix D. In the Nordic region, smoking was most prevalent among men, 18–24- and 25–44-y-olds and the low educated.

Because of the very large social differences in smoking behaviour in all the Nordic countries, implementation of smoking cessation with high reach among the low educated is needed. Policy making, prevention and smoking cessation are needed actions

to decrease the proportion of smokers in the Nordic countries. This may have a large effect on the health of the population in the Nordic region.

### 8.3.1 *Comparison with other national estimates from the Nordic countries among adults*

The population levels and the development of smoking among adults in the Nordic countries according to other national estimates are shown in Table 81. Other national estimates are useful to compare the population levels of smoking with NORMO data and to show the most recent development of smoking in the Nordic countries. Other national estimates display the development of smoking from 2007 to 2014.

When comparing other national estimates with NORMO data, population levels and rankings of the proportion of smokers in the Nordic countries differ. However, the ranking of Denmark as the country with the highest proportion of daily smokers and Sweden as the country with the lowest proportion of daily smokers was similar for other national estimates and NORMO data. Other national estimates showed lower proportions of smokers and daily smokers in Denmark, Finland and Iceland than NORMO data, while the proportion of smokers was higher in Sweden. Similar estimates were seen for smoking and daily smoking in Norway and for the proportion of daily smokers in Sweden. It is not clear what the reason may be for the differences mentioned above.

Other national estimates show that the proportions of smokers and daily smokers are decreasing in all the Nordic countries. The proportion of smokers has decreased two to seven percentage points between 2007 and 2014 in the five Nordic countries according to other national estimates. The decrease in smoking behaviour was primarily due to a decrease in the proportion of daily smokers.

In summary, population levels of smoking in the Nordic countries according to other national estimates are not in line with NORMO data.

**Table 81: Population levels and the development of smoking among *adults* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden		Iceland		Norway	
	2010	2013	2011	2014	2011	2014	2007	2012	2010	2013
	(16+ y)		(15–64 y)		(16–84 y)		(18+ y)		(16–74 y)	
Total smokers (%)	25.3	21.6	24.9	21.9	22.0	20.0	23.7	17.2	28.8	23.2
Daily smokers (%)	20.9	17.0	16.4	13.8	11.0	10.0	18.2	12.4	18.9	14.4
Occasional smokers (%)	4.4	4.6	8.5	8.1	11.0	10.0	5.5	4.8	9.9	8.8

## 9. Alcohol

Alcohol consumption is associated with mostly negative health effects such as increased risk of certain types of cancers and injuries and tends to have a negative effect on diet quality (NNR 2012, WHO 2011). Based on the overall evidence, it is recommended to limit alcohol consumption and avoid binge drinking.

In this chapter, population levels of alcohol consumption, i.e. mean total alcohol consumption per week and the proportion of binge drinkers at least once during the last month,<sup>8</sup> are reported among adults in the Nordic countries. Alcohol consumption was assessed for the first time in NORMO 2014 why it is only possible to examine the population levels. Other national estimates are used to compare the population levels and describe the most recent development of alcohol consumption in the Nordic countries. Data on the population levels of alcohol consumption according to age and education in each of the five Nordic countries are commented in this chapter, but data are not tabulated.

Alcohol was not part of the Nordic Plan of Action in 2006 (Nordic Council of Ministers) why no goals and visions have been formulated for alcohol consumption in the Nordic countries.

When comparing alcohol consumption between the Nordic countries, only countries where it is possible to identify one or more countries with the highest and/or lowest mean total alcohol consumption and proportion of binge drinkers will be commented in the key findings below.

### 9.1 Key findings

#### 9.1.1 Adults

- In 2014, mean total alcohol consumption was 1.7 times/week and 45% were binge drinkers at least once during the last month among adults in the Nordic region. Mean total alcohol consumption and the proportion of binge drinkers were higher

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<sup>8</sup> The proportion of binge drinkers at least once during the last month will be referred as just the proportion of binge drinkers to keep the terms short.



in men than in women (2.2 vs. 1.3 times/week and 55.7% vs. 34.2%). The lowest mean total alcohol consumption was seen in Iceland and the highest in Denmark. The lowest proportion of binge drinkers was observed in Sweden and Iceland, and the highest in Norway.

- In the Nordic region, mean total alcohol consumption and the proportion of binge drinkers were higher in men than in women (2.2 vs. 1.3 times/week and 55.7% vs. 34.2%).
- Mean total alcohol consumption was higher in 45–65-y-olds than in 18–24- and 25–44-y-olds, whereas the proportion of binge drinkers decreased across age groups.
- Mean total alcohol consumption was higher among the high educated than among the medium and low educated, while the proportion of binge drinkers was higher among the medium educated than among the high educated. In the Nordic region, the social difference in alcohol consumption was moderate and just small in binge drinking.
- According to other national estimates the proportions exceeding the weekly alcohol limits and binge drinkers did not change or decreased in the Nordic countries over the last decade.

### 9.1.2 Conclusions

Mean total alcohol consumption was 1.7 times/week and the proportion of binge drinkers was 45% among adults in the Nordic region. In the Nordic countries, mean total alcohol consumption varied between 1.2–2.5 times/week and the proportion of binge drinkers between 39–52% in 2014. The highest mean total alcohol consumption was seen in Denmark and the highest proportion of binge drinkers in Norway. The social difference in alcohol consumption was moderate and just small in binge drinking in the Nordic region.

## 9.2 Results

### 9.2.1 Adults

In 2014, mean total alcohol consumption was 1.7 times/week and 45% were binge drinkers at least once during the last month among adults in the Nordic region (Table 82). Ranking of the alcohol consumption and the proportion of binge drinkers in the five Nordic countries is shown in Table 83. The alcohol consumption was higher in Denmark

than in the other Nordic countries and lower in Iceland than in the other countries. The proportion of binge drinkers was higher in Norway than in the other Nordic countries and lower in Iceland and Sweden than in Finland and Denmark.

**Table 82: Mean total alcohol consumption and the proportion of binge drinkers (95% CI) among *adults* in the Nordic countries. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=2,007)	2014 (n=1,711)	2014 (n=1,799)	2014 (n=2,004)	2014 (n=1,056)	2014 (n=8,577)
Total alcohol consumption (freq./week)	2.5 (2.3;2.6)	1.5 (1.4;1.6)	1.5 (1.4;1.6)	1.2 (1.1;1.3)	1.6 (1.4;1.8)	1.7 (1.7;1.8)
Binge drinking last month (%)	46.3 (44.1;48.5)	44.5 (42.1;46.8)	40.9 (38.5;43.3)	39.1 (37.0;41.3)	51.5 (48.5;54.6)	45.0 (43.9;46.1)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 83: Ranking from lowest to highest mean total alcohol consumption and the proportion of binge drinkers among adults in the five Nordic countries.<sup>9</sup> NORMO 2014**

Total alcohol consumption (freq./week)		Binge drinking last month (%)	
Iceland	1.2	Iceland	39.1
Sweden	1.5	Sweden	40.9
Finland	1.5	Finland	44.5
Norway	1.6	Denmark	46.3
Denmark	2.5	Norway	51.5

### 9.2.2 Gender

In the Nordic region, the alcohol consumption and the proportion of binge drinkers were higher in men than in women (2.2 vs 1.3 times/week and 55.7% vs. 34.2%). This gender difference in alcohol behaviour was found in all the Nordic countries (Table 84 and 85).

<sup>9</sup> ≥ 5 units of alcohol per drinking occasion at least once during the last month

**Table 84: Mean total alcohol consumption and the proportion of binge drinkers (95% CI) among *men* in the Nordic countries. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=976)	2014 (n=753)	2014 (n=826)	2014 (n=888)	2014 (n=483)	2014 (n=3,926)
Total alcohol consumption (freq./week)	3.2 (2.9;3.5)	2.0 (1.8;2.2)	1.8 (1.7;1.9)	1.5 (1.3;1.6)	1.9 (1.5;2.3)	2.2 (2.1;2.3)
Binge drinking last month (%)	55.5 (52.4;58.6)	58.2 (54.7;61.8)	53.8 (50.3;57.3)	46.0 (42.7;49.3)	57.2 (52.8;61.7)	55.7 (54.1;57.3)

**Table 85: Mean total alcohol consumption and the proportion of binge drinkers (95% CI) among *women* in the Nordic countries. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=1,030)	2014 (n=958)	2014 (n=973)	2014 (n=1,116)	2014 (n=573)	2014 (n=4,650)
Total alcohol consumption (freq./week)	1.7 (1.6;1.9)	1.1 (1.0;1.2)	1.1 (1.1;1.2)	0.9 (0.8;1.0)	1.3 (1.1;1.4)	1.3 (1.2;1.3)
Binge drinking last month (%)	36.9 (34.0;39.9)	31.5 (28.5;34.5)	27.2 (24.3;30.2)	32.3 (29.6;35.1)	45.9 (41.8;50.0)	34.2 (32.8;35.6)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

### 9.2.3 Age

In the Nordic Region, alcohol consumption was higher in 45–65-y-olds than in 18–24- and 25–44-y-olds (Table 86). This was found in all the Nordic countries, except in Norway where alcohol consumption was higher in 45–65-y-olds than in 25–44-y-olds.

An inverse age gradient was found in binge drinking in the Nordic region, i.e. the proportion of binge drinkers decreased across age groups. This inverse age gradient was found in all the Nordic countries, except in Norway where the proportion of binge drinkers was higher in 18–24- and 25–45-y-olds than in 45–65-y-olds.

**Table 86: Mean total alcohol consumption and the proportion of binge drinkers (95% CI) among adults according to age in the Nordic region. NORMO 2014**

	Nordic region <sup>@</sup>		
	18–24 y	25–44 y	45–65 y
	2014 (n=846)	2014 (n=3,076)	2014 (n=4,655)
Total alcohol consumption (freq./week)	1.4 (1.3;1.5)	1.4 (1.3;1.4)	2.2 (2.1;2.3)
Binge drinking last month (%)	64.3 (61.1;67.5)	48.0 (46.2;49.8)	35.5 (34.1;37.0)

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

#### 9.2.4 Education

Alcohol consumption was higher among the high educated than among the medium and low educated in the Nordic region (Table 87). Analyses in each of the five Nordic countries showed that alcohol consumption was higher among the high educated than among the medium educated in Finland and higher among the medium and high educated than among the low educated in Iceland.

**Table 87: Mean total alcohol consumption and the proportion of binge drinkers (95% CI) among adults according to education in the Nordic region. NORMO 2014**

	Nordic region <sup>@</sup>		
	Low	Medium	High
	2014 (n=1,064)	2014 (n=3,132)	2014 (n=4,365)
Total alcohol consumption (freq./week)	1.6 (1.4;1.7)	1.7 (1.6;1.8)	1.9 (1.8;1.9)
Binge drinking last month (%)	45.4 (41.8;49.0)	46.2 (44.4;47.9)	43.2 (41.8;44.7)
Relative difference total alcohol consumption <sup>#</sup> (%)	–	–	16
Relative difference binge drinking last month <sup>#</sup> (%)	–	–	–5

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

<sup>#</sup>Relative difference (%) = [(value High education group – value Low education group)/value High education group]\*100.

In the Nordic region and in Sweden, the proportion of binge drinkers was higher among the medium educated than among the high educated. In Denmark, the proportion of

binge drinkers was higher among the medium and high educated than among the low educated, while the proportion of binge drinkers was higher among the low and medium educated than among the high educated in Finland. Finally, the proportion of binge drinkers was higher among the low educated than among the medium educated in Norway.

The social difference in alcohol consumption was moderate in the Nordic region and in all the Nordic countries, except in Iceland with a large difference. A small social difference in binge drinking was found when analysing the Nordic region, while large social differences were observed in Denmark, Finland and Norway, a moderate difference in Sweden and just a small difference in Iceland.

### 9.3 Discussion

A mean total alcohol consumption of 1.7 times per week was found among adults in the Nordic region. Large differences were found in alcohol consumption between the Nordic countries. The alcohol consumption was two times higher in Denmark than in Iceland. No state-owned retail alcohol monopoly exists in Denmark in contrast to the other Nordic countries (Hallberg and Österberg 2014). In addition, Denmark is the country with the lowest age limit for purchasing alcohol in retail sale and the lowest taxation and prices of alcoholic beverages.

The highest alcohol consumption was seen among men, 45–65-y-olds and the high educated which make these groups relevant to target when planning public health initiatives for the general population.

Binge drinking is a public health challenge in relation to alcohol consumption and the highest proportion of binge drinkers was found in Norway. Binge drinking was more prevalent among men than among women. The highest proportion of binge drinkers was observed in 18–24-y-olds.

The social differences in alcohol consumption were moderate in all the Nordic countries, except in Iceland with a large difference.

#### 9.3.1 *Comparison with other national estimates from the Nordic countries*

Table 88 and 89 show the population levels and the development of alcohol consumption and the proportions exceeding weekly alcohol limits and binge drinkers in each of the five Nordic countries according to other national estimates. Other national estimates are useful to compare the population levels of alcohol consumption and binge drinking with

NORMO data and to show the most recent development in the Nordic countries. Other national estimates display the development from 2005 to 2014.

**Table 88: Population levels and the development of mean total alcohol consumption among *adults* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden	Iceland		Norway	
	2005–2008	2011–2013	2011	2014	2010–2011	2007	2012	2012	2014
	(15–75 y)		(25–74 y)		(16–65 y)	(18+ y)		(16–79 y)	
Total alcohol consumption (frequency/week)	3.0	2.7	N/A	N/A	2.6	0.8	0.8	N/A	N/A

Note: N/A: Not available.

**Table 89: Population levels and the development of the proportions exceeding weekly alcohol limits and binge drinkers among *adults* in the Nordic countries according to other national estimates**

	Denmark		Finland		Sweden		Iceland		Norway	
	2010	2013	2011	2014	2011	2014	2007	2010–2011	2012	2014
	(16+ y)		(25–74 y)		(16–84 y)		(18+ y)	(18–80 y)	(16–79 y)	
Exceeding weekly alcohol limits (Men $\geq 14$ units/week and women $\geq 7$ units/week) (%)	24.3	20.6	16.3	16.5	17.0	16.0	N/A	13.5	N/A	N/A
Binge drinking last month $\geq 5$ units/occasion (%)	N/C	29.5	27.8*	27.1*	N/A	N/A	22.8	20.4	27.0*	27.0*

Note: N/A: Not available.  
N/C: Not comparable.  
\*  $\geq 6$  units/occasion.

Few other national estimates on alcohol consumption and binge drinking were available for the Nordic countries.

Consumption of alcohol was similar for Denmark according to other national estimates and NORMO data, but other national estimates show higher alcohol consumption for Iceland and lower alcohol consumption for Sweden than NORMO data. The differences between other national estimates and NORMO data may be due to differences in participation rates, survey years, age groups and assessment method used. The ranking of Iceland as having the lowest consumption of alcohol and Denmark as having the highest was however the same for other national estimates and NORMO data.

The population levels of binge drinkers are much lower in all the Nordic countries according to other national estimates compared with NORMO data. The large difference between other national estimates and NORMO data in the proportion of binge drinkers is mainly explained by definitions of binge drinking. Denmark may be used as an example to illustrate this because binge drinking was defined as binge drinking regularly each month according to other national estimates, while binge drinking in NORMO was defined as binge drinking at least once per month. Ranking of Iceland as the country with the lowest proportion of binge drinkers was however consistent between other national estimates and NORMO data.

Too few other national estimates were available on the mean total alcohol consumption to comment on the development over time. However, other national estimates show that the proportions exceeding the weekly alcohol limits and binge drinkers did not change or decreased over time in the Nordic countries.

In summary, the population levels of alcohol consumption and binge drinking in the Nordic countries according to other national estimates are not in agreement with NORMO data. This could be due to differences in participation rate, assessment methods and definitions (binge drinking) used.

## 10. Overview of results and discussion

### 10.1 The Nordic region

The Nordic Monitoring System (NORMO) has now collected data for 2011 and 2014 among adults and children in the Nordic countries. The population levels and the development of diet, physical activity, sedentary behaviour and overweight/obesity and obesity in the Nordic region are shown in figure 9. A dietary quality score is used for describing the overall nutritional quality of the diet. The low scores, between 0–4, is a measure of a diet, which is unhealthy in several parameters e.g. low in fruits and vegetables, whole grain bread, and/or fish and/or high in foods rich in saturated fat and added sugar. The low diet quality scores is used as a key variable and named “unhealthy diet”. The proportions of inactive (not meeting physical activity recommendations) and with high recreational screen time (> 4 h/day) are used as indicators of physical activity and sedentary behaviour, respectively. The prevalence of overweight/obesity (OW/OB) and obesity (OB) is calculated on basis of BMI levels – Overweight/obesity: BMI $\geq$ 25, Obesity: BMI $\geq$ 30.

Other national estimates from the Nordic countries for diet, physical activity, overweight, smoking and alcohol have been obtained to compare with the population levels and the development of the Nordic monitoring data. It is highly relevant to evaluate NORMO results against other estimates from national surveys, but this has highlighted the importance of measuring the population level and the development in the same survey years, age groups and using the same assessment method and definitions as has been done in NORMO.



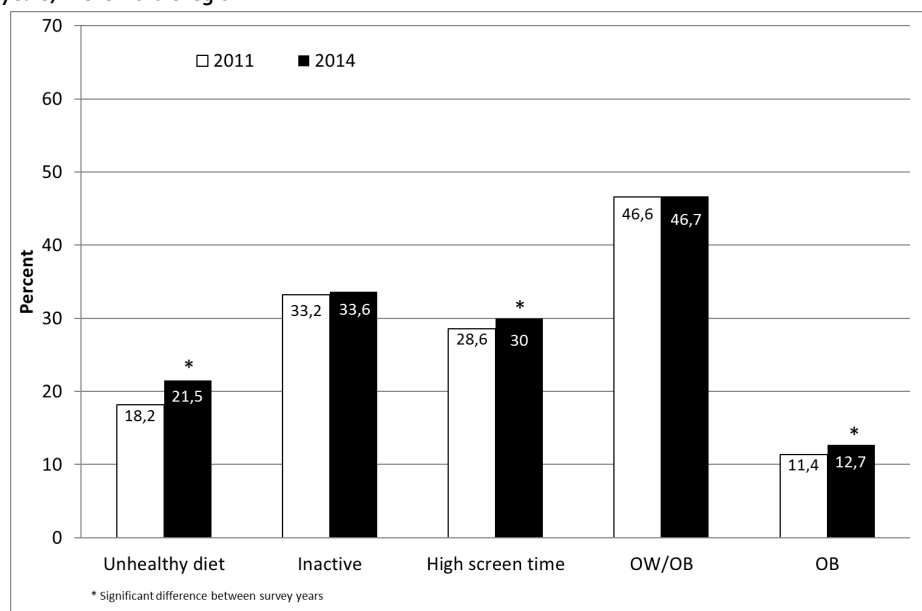
The overall picture shows that the proportion of adults with an unhealthy diet was more than 20% and had increased from 2011 to 2014 (Figure 9), while the proportion with a healthy diet decreased and only was 10% in 2014 (Figure 1 in the chapter on diet). Around 1/3 of all adults were inactive and three in ten spent more than 4 hours daily on recreational screen time. Furthermore, the increase in OB prevalence and in the proportions of highly inactive (almost no weekly moderate and vigorous intensity physical activity, Table 37 in the chapter on physical activity) and with sedentary behaviour (high recreational screen time) among adults are of concern. Finally, the prevalence of OW/OB and OB among adults was high.

Among children in the Nordic region, there were no changes in diet, physical activity, sedentary behaviour and in the prevalence of OW/OB and OB between 2011 and 2014. Although it is encouraging that the same unfavorable development was not seen for children as for adults, the high population levels are of concern. Even though the proportion of children with an unhealthy diet was 15%, the proportion with a healthy diet was only 10% as for adults (Figure 3 in the chapter on diet). The proportion of inactive children in the Nordic region was approx. 60% and therefore too high. Also the prevalence of OW/OB and OB was relative high; and a halt in development has previously been followed by a rise.

## 10.2 Adults in the Nordic region

In 2014, one in five adults had an unhealthy diet in the Nordic region. The proportion with an unhealthy diet was higher in men than in women (25% vs. 18%). The proportion with an unhealthy diet increased from 18% in 2011 to 22% in 2014 (Figure 9). The proportion increased more in men than in women. The proportion with an unhealthy diet decreased in 18–24-y-olds, but increased in 25–44- and 45–65-y-olds and among the low and high educated.

**Figure 9: Population levels and the development in the proportions with an unhealthy diet, inactive and with high recreational screen time and the prevalence of OW/OB and OB among adults (18–65 years) in the Nordic region**



In 2014, one in three adults were physically inactive in the Nordic region. The proportion of inactive did not differ between genders. No change was observed in the proportion of inactive between 2011 and 2014 (Figure 9). This was also found when gender and education were analysed (Table 39, 40 and 45 in the chapter on physical activity). But the proportion of inactive increased in 18–24-y-olds. Moreover, the proportion of highly inactive increased from 11% in 2011 to 12% in 2014 in the Nordic region (Table 37 in the chapter on physical activity). The proportion of highly inactive increased in women and 18–24-y-olds and among the medium and high educated. Between 2011 and 2014, the proportion of highly active increased from 13% to 14% in the Nordic region. The proportion of highly active increased in men and among the high educated. The increased proportions of both highly inactive and highly active adults indicate an increased polarisation in the physical activity pattern in the Nordic region.

With regard to sedentary behavior in 2014, three in ten adults spent more than four hours daily on recreational screen time in the Nordic region. The proportion with high recreational screen time was higher in men than in women (33% vs. 27%). The proportion with high recreational screen time increased from 29% in 2011 to 30% in 2014 (Figure 9), however no significant change was found in men or women. The proportion with

high recreational screen time increased in 45–65-y-olds and among the low educated from 2011 to 2014.

In 2014, almost one in two adults were overweight or obese and one in eight were obese in the Nordic region. The prevalence of OW/OB and OB was higher in men than in women (56% vs. 37%, and 14% vs. 11%). No change was found in the prevalence of OW/OB between 2011 and 2014. However, the prevalence of OB increased from 11% to 13% (Figure 9). This was mainly due to an OB increase in women. The prevalence of OB increased in 25–44- and 45–65-y-olds and among the high educated, but decreased in 18–24-y-olds.

In 2014, one in five adults were smokers, i.e. daily or occasionally smokers, and one in seven were daily smokers in the Nordic region. The proportion of smokers was higher in men than in women (22% vs. 20%) and in 18–24- and 25–44-y-olds than in 45–65-y-olds. No gender difference was found for daily smokers, but the proportion of daily smokers was higher in 45–65-y-olds than in 18–24-y-olds. The proportions of smokers and daily smokers decreased with increasing level of education. According to other national estimates from the Nordic countries the proportions of smokers and daily smokers have been declining in the Nordic countries during the last decade.

In 2014, the mean frequency of total alcohol consumption was 1.7 times/week and 45% were binge drinkers at least once during the last month among adults in the Nordic region. Mean total alcohol consumption and the proportion of binge drinkers were higher in men than in women (2.2 vs. 1.3 times/week and 56% vs. 34%). Furthermore, mean total alcohol consumption was higher in 45–65-y-olds than in 18–24- and 25–44-y-olds, and higher among the high educated than among the medium and low educated, whereas the proportion of binge drinkers decreased across age groups and was higher among the medium educated than among the high educated. According to other national estimates from the Nordic countries the proportions exceeding the weekly alcohol limits and binge drinkers did not change or decreased in the Nordic countries during the last decade.

### 10.3 Children in the Nordic region

In 2014, one in seven children had an unhealthy diet in the Nordic region. The proportion with an unhealthy diet was higher in boys than in girls (18% vs. 14%). The proportion with an unhealthy diet did not change between 2011 and 2014, neither in boys nor in girls (Table 28 and 30 in the chapter on diet). The proportion with an unhealthy diet was higher in children with a low or medium educated parent than in children with a

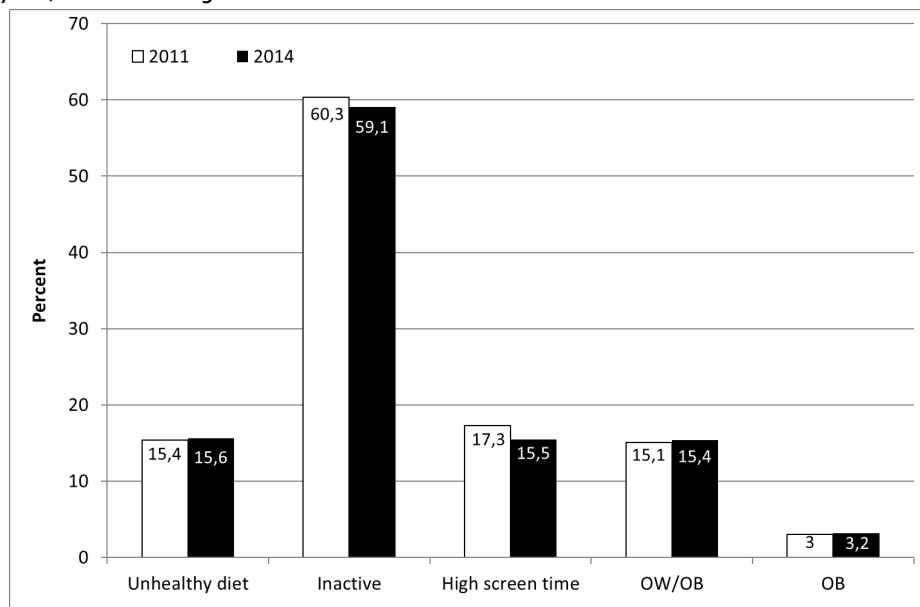
high educated parent, and it increased in children with a low educated parent and decreased in children with a high educated parent (Table 32 in the chapter on diet).

In 2014, six in ten children were physically inactive in the Nordic region. The proportion of inactive was higher in girls than in boys (64% vs. 54%). The proportion of inactive did not change between 2011 and 2014 in the Nordic region (Figure 10). This was also found when analysing gender and parental education. In girls, the proportion of highly inactive decreased from 2011 to 2014.

In 2014, more than one in seven children spent more than four hours daily on recreational screen time in the Nordic region (Figure 10). The proportion with high recreational screen time was higher in boys than in girls (18% vs. 13%). The proportion with high recreational screen time did not change between 2011 and 2014 among children in the Nordic region. No significant change was also found when parental education was analysed (Table 55 in the chapter on physical activity). However, the proportion with high recreational screen time decreased in girls from 2011 to 2014 while no change was found in boys.

In 2014, more than one in seven children were overweight or obese and 3% were obese in the Nordic region (Figure 10). The prevalence of OW/OB and OB did not differ between genders. The prevalence of OW/OB and OB did not change between 2011 and 2014 indicating that the OB prevalence among children in the Nordic countries is on a plateau. However, OW/OB prevalence increased among girls, indicating a risk of a further rise in both OW/OB and OB among children (Table 6g in the chapter on overweight and obesity). The prevalence of OW/OB increased between 2011 and 2014 in children with a high educated parent (Table 70 in the chapter on overweight and obesity).

Figure 10: Population levels and the development in the proportions with an unhealthy diet, inactive and with high recreational screen time and the prevalence of OW/OB and OB among children (7–12 years) in the Nordic region



#### 10.4 Natural fluctuations or downward/upward temporal trends

The increases in the prevalence of OB and in the proportions with an unhealthy diet, highly inactive and with high recreational screen time are all unfavorable developments among adults in the Nordic region. Even though the increases only are 1 to 3 percentage points, it is of great concern because the analysed time period is only three years. On the other hand, it cannot be ruled out that some of the significant changes in NORMO may be due to natural variation influenced by different factors such as participation rate. Thus, based on two data collections, three years apart, it is too early to make too firm interpretations of the situation and the development in the Nordic region. The Nordic monitoring has to be repeated before temporal trends may be interpreted more distinctly.

## 10.5 The most and least favorable health behaviour and weight status in the five Nordic countries

In the following section, the most and least favorable health behaviour and weight status has been compared in the five Nordic countries among adults and children using data from NORMO 2014 (Table 90 and 91).

**Table 90: Nordic countries with the most and least favourable health behaviour and weight status among adults according to data from NORMO 2014. A dash means that it is not possible to identify one or more countries as the most or least favourable**

	Most favorable	Least favorable
<b>Diet</b>		
Unhealthy diet (%)	Norway, Finland	Sweden
Fruits and vegetables (freq./day)	Sweden	Iceland
Fish (freq./week)	Iceland	Denmark
Whole-grain bread (freq./day)	Norway	Iceland
High intake of foods rich in saturated fat (%)	Denmark	Sweden
High intake of sugar-rich foods (%)	Norway	Iceland
<b>Physical activity and sedentary behaviour</b>		
Inactive (%)	Finland, Sweden	Norway
High recreational screen time (> 4h/day) (%)	Sweden, Iceland	–
<b>Smoking</b>		
Smokers (%)	Sweden	–
Daily smokers (%)	Sweden	Denmark
<b>Alcohol</b>		
Mean total alcohol consumption (freq./week)	Iceland	Denmark
Binge drinking last month (%)	Sweden, Iceland	Norway
<b>Weight status</b>		
OW/OB (%)	Denmark, Finland, Sweden, Norway	Iceland
OB (%)	Sweden	Iceland

**Table g1: Nordic countries with the most and least favourable health behaviour and weight status among children according to data from NORMO 2014. A dash means that it is not possible to identify one or more countries as the most or least favourable**

	Most favorable	Least favorable
<b>Diet</b>		
Unhealthy diet (%)	–	Sweden
Fruits and vegetables (freq./day)	Denmark, Sweden	Iceland, Norway
Fish (freq./week)	Iceland	Denmark
Whole-grain bread (freq./day)	Norway	Sweden, Iceland
High intake of foods rich in saturated fat (%)	Denmark	–
High intake of sugar-rich foods (%)	Norway	–
<b>Physical activity and sedentary behaviour</b>		
Inactive (%)	Finland	Sweden
High recreational screen time (> 4h/day) (%)	Iceland	–
<b>Weight status</b>		
OW/OB (%)	–	–
OB (%)	–	–

Denmark had the most favorable intake of foods rich in saturated fat among adults and children (lowest proportion with a high intake of foods rich in saturated fat) in the Nordic countries and the most favorable intake of fruits and vegetable among children. But Denmark also had the least favorable intake of fish among adults and children and the least favorable daily smoking and alcohol behaviour among adults.

Finland had the most favorable diet (lowest proportion with an unhealthy diet) among adults and the most favorable physical activity behaviour (lowest proportion of inactive) among adults and children.

Sweden had the lowest prevalence of OB among adults in the Nordic countries and the most favorable health behaviour as regards intake of fruit and vegetables among adults and children and regarding physical activity, sedentary behaviour (lowest proportion with high recreational screen time), smoking and binge drinking among adults. However, Sweden also had the least favorable diet (highest proportion with an unhealthy diet) among adults and children and the highest proportion of inactive children. The intake of foods rich in saturated fat was not favorable among adults and the intake of whole grain bread was not favorable among children in Sweden compared to the other Nordic countries.

Iceland was the Nordic country with the most favorable intake of fish among adults and children, the most favorable sedentary behaviour among adults and children and the most favorable alcohol behaviour (lowest mean total alcohol consumption) among adults. But Iceland was also the country with the least favorable intake of fruits and vegetables and whole grain bread among adults and children and the least favorable

sugar intake (highest proportion with a high intake of sugar-rich foods) among adults. In addition, Iceland had the biggest weight problem of the Nordic countries because of the high OW/OB and OB prevalence among adults.

Finally, Norway was the Nordic country with most favorable diet among adults and the most favorable whole grain bread and sugar intake (lowest proportion with a high intake of sugar-rich foods) among adults and children, but Norway also had the highest proportions of inactive and binge drinkers among adults and the least favorable intake of fruit and vegetables among children.

In summary, the main findings show that the magnitude of the challenges in the different areas differ between the five Nordic countries. However, there is still a need for improvements in all of the Nordic countries in many areas. All of the Nordic countries, except Finland are challenged with some specific unfavorable population levels in health behaviour and weight status among adults and/or children compared to the other Nordic countries.

## **10.6 The development in the five Nordic countries and in the Nordic region**

Table 92 and 93 gives an overview on how the key variables on diet, physical activity and overweight developed from 2011 to 2014 among adults and children, respectively in each of the five Nordic countries and in the Nordic region.



**Table g2: The development in health behaviour and weight status among adults in the Nordic countries and in the Nordic region (favorable, unchanged, unfavorable). NORMO 2011 and 2014**

	DK	FI	SE	IS	NO	Nordic region <sup>@</sup>
<b>Diet</b>						
Unhealthy diet (%)	Unchanged	Unchanged	Unfavorable	Unfavorable	Unfavorable	Unfavorable
Fruit & vegetables (freq./day)	Unchanged	Favorable	Favorable	Unchanged	Unfavorable	Unchanged
Fish (freq./day)	Unfavorable	Unchanged	Unchanged	Unchanged	Unfavorable	Unfavorable
Whole-grain bread (slices/day)	Unfavorable	Unfavorable	Unfavorable	Unfavorable	Unfavorable	Unfavorable
High intake of foods rich in saturated fat (%)	Unchanged	Unchanged	Unfavorable	Unfavorable	Unfavorable	Unfavorable
High intake of sugar-rich foods (%)	Favorable	Favorable	Unchanged	Unchanged	Favorable	Favorable
<b>Physical activity and sedentary behaviour</b>						
Inactive (%)	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
High recreational screen time (> 4h/day) (%)	Unfavorable	Unfavorable	Unchanged	Unfavorable	Favorable	Unfavorable
<b>Weight status</b>						
OW/OB (%)	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
OB (%)	Unchanged	Unchanged	Unchanged	Unfavorable	Unfavorable	Unfavorable

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

### 10.6.1 Adults

Among adults in the Nordic region, the overall diet quality (unhealthy diet), sedentary behaviour (high recreational screen time) and the prevalence of OB developed unfavorably from 2011 to 2014 while no change was seen in physical activity (inactive) and in the prevalence of OW/OB. The unfavorable development in the key variables of health behaviour and OB prevalence was evident in especially Iceland, but also in Norway. Nevertheless, an unfavorable development was also seen in Denmark and Finland with regard to sedentary behaviour and in Sweden with regard to the proportion with an unhealthy diet.

The only favorable development among adults in the Nordic region was the decrease in the proportion with a high consumption of sugar-rich foods. This was also seen in Denmark, Finland and Norway while no change was found in Sweden and Iceland. In

the Nordic region, the proportion with an unhealthy diet increased and this unfavorable development was also seen for the intake of fish and whole grain bread (decreases) and the proportion with a high intake of foods rich in saturated fat (increase).

The decrease in the intake of whole grain bread was seen in all the Nordic countries, while the decrease in the intake of fish was seen in Denmark and Norway; and the increase in the proportion with a high intake of foods rich in saturated fat was seen in Sweden, Iceland and Norway.

There was no change in the intake of fruit and vegetables in the Nordic region, but an increase was found in Finland and Sweden and a decrease in Norway. When looking at the proportion meeting "5+ a day", an increase was also observed in Finland while a decrease was seen in Norway (Table 15 in the chapter on diet).

The proportions eating fish as a main meal twice a week and eating at least half of their daily bread intake as whole grain bread also decreased slightly in the Nordic region. The proportion eating fish as a main meal twice a week decreased in Denmark and Norway and the proportion eating at least half of their daily bread intake as whole grain bread decreased slightly in Finland and Iceland (Table 15 in the chapter on diet).

The unfavorable development in the proportion with high recreational screen time (increased) was seen in the Nordic region and in Denmark, Finland and Iceland while no change was seen in Sweden and a decrease was found in Norway. Differences due to gender, age, and education are described in the chapters of the report.

The development in OW/OB did not change among adults in the Nordic region as well as in the Nordic countries. The unfavorable OB development among adults in the Nordic region was also seen in Iceland and Norway while no significant change was observed in Denmark, Finland and Sweden.

### **10.6.2 Children**

Among children in the Nordic region, there was no overall change in diet (unhealthy diet), physical activity (inactive), sedentary behaviour (high recreational screen time) and OW/OB and OB prevalence between 2011 and 2014. This was also seen in each of the five Nordic countries, except in Finland with a decrease in the proportion with an unhealthy diet and in Norway with a decrease in the proportion of inactive.

Although the proportion with an unhealthy diet did not change in the Nordic region, changes were found when analysing the diet in more details. The favorable changes were a decrease in the proportion with a high consumption of sugar-rich foods, and increased intake of fruits and vegetables and fish, including fish as a main meal twice a week, while the proportion eating "5+ a day" did not change (Table 26 and 27 in the chapter on diet). The favorable development in the intake of fruits and vegetables

was seen in Finland and Sweden. and the favorable development in the intake of fish was seen in Denmark, Finland and Iceland.

The development in the intake of whole grain bread was however not favorable among children in the Nordic region, and this was also seen in Iceland and Norway. However, while the proportion eating at least half of their daily bread intake as whole grain bread did not change in the Nordic region, the development in the proportion eating half of their daily bread intake as whole grain was only unfavorable in Norway (Table 26 in the chapter on diet).

**Table 93: The development in health behaviour and weight status among children in the Nordic countries and in the Nordic region (favorable, unchanged, unfavorable). NORMO 2011 and 2014**

	DK	FI	SE	IS	NO	Nordic region@
<b>Diet</b>						
Unhealthy diet (%)	Unchanged	Favorable	Unchanged	Unchanged	Unchanged	Unchanged
Fruits and vegetables (freq./day)	Unchanged	Favorable	Favorable	Unchanged	Unchanged	Favorable
Fish (freq./week)	Favorable	Favorable	Unchanged	Favorable	Unchanged	Favorable
Whole-grain bread (slices/day)	Unchanged	Unchanged	Unchanged	Unfavorable	Unfavorable	Unfavorable
High intake of foods rich in saturated fat (%)	Favorable	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
High intake of sugar-rich foods (%)	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Favorable
<b>Physical activity and sedentary behaviour</b>						
Inactive (%)	Unchanged	Unchanged	Unchanged	Unchanged	Favorable	Unchanged
High recreational screen time (> 4h/day) (%)	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
<b>Weight status</b>						
OW/OB (%)	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged
OB (%)	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged	Unchanged

Note: @Weighted according to population size in the five Nordic countries.

### 10.6.3 Comparison with other national estimates in the Nordic countries

Other national estimates from the Nordic countries are to some extent in line with NORMO data when the development of diet, physical activity and overweight are compared. However, other national estimates on the dietary intake are few and the discrep-

ancies between other national estimates and NORMO data are probably due to different participation rates, age groups, survey years, dietary assessment methods and definitions used.

#### **10.6.4 *Summary of the development and the challenges in the Nordic region and the Nordic countries***

Results indicate that the development of diet, physical activity and overweight is heading in the wrong direction among adults in the Nordic region, while the development among children is more favorable. There is still a need for improvements in all the Nordic countries in all areas. Each of the Nordic countries is challenged with some specific unfavorable population levels and/or development in health behaviour and weight status among adults and/or children.

Denmark is challenged with unfavorable smoking and alcohol behaviour among adults. The high population levels of daily smoking and total alcohol consumption are a major threat to public health due to the increased risk of premature death and chronic diseases.

Sedentary behaviour may be an increasing public health challenge among adults in Finland taking the most recent development of high recreational screen time into consideration.

The population level and the development of the proportion with an unhealthy diet in Sweden are of concern, especially among adults. In addition, the high proportion of inactive children in Sweden is worrying from a public health point perspective even if the level did not change between 2011 and 2014. Sweden is far away from fulfilling the common Nordic ambition about all children being physically active in 2021.

The current situation and the development of OW/OB and OB indicate that this is a major public health problem among adults in Iceland.

Finally, the high proportion of inactive among adults in Norway may give rise to concern even if no change was detected between 2011 and 2014.

#### **10.6.5 *Interrelationship between results on diet, physical activity and overweight***

Changes in obesity-promoting factors such as unhealthy diet, physical inactivity and sedentary behaviour might have contributed to the observed OB increase between 2011 and 2014 among adults in the Nordic region. There have been increases among adults eating an unhealthy diet, and in the proportions of highly inactive and sedentary

individuals in the Nordic countries. These findings may be linked to the observed OB increase among adults in the Nordic countries.

Results show that the prevalence of OB increased in women, but not in men. The proportion with an unhealthy diet increased in both men and women between 2011 and 2014, but the increase was higher in men than in women. The development of physical activity was however different between genders because the proportion of highly inactive increased in women whereas the proportion of highly active increased in men. Even if these findings may shed some light on the OB increase found in women, they should be interpreted with caution because results on diet and physical activity did not strongly support the different development in OB among men and women.

In 2014, the highest prevalence of OB among adults was found in Iceland and the lowest in Sweden. When comparing Iceland and Sweden, a slightly higher proportion with an unhealthy diet was found in Sweden than in Iceland although the consumption of sugar-rich foods was higher and the consumption of fruits and vegetables was lower in Iceland compared with Sweden. The observed differences in OB may also be explained by physical activity and sedentary behaviour. The amount of moderate and vigorous intensity physical activity was lower in Iceland than in Sweden while recreational screen time was higher in Iceland. These differences were mirrored in higher proportions of inactive and highly inactive in Iceland compared with Sweden. Overall, these results indicate that the lifestyle among adults in Iceland is less active and more sedentary compared with Sweden. This may be part of the explanation of the large differences in OB prevalence between the two countries.

There was no change in the prevalence of OW/OB between 2011 and 2014 among children in the Nordic region, which is in line with the unchanged proportion with an unhealthy diet and the unchanged level of physical activity and sedentary behaviour.

#### **10.6.6 Evaluation of Goals 2011 and Visions 2021 for diet, physical activity and overweight**

The common Nordic ambitions of better health through diet and physical activity still have a long way to go among adults and children when evaluating Goals 2011 and Visions 2021 for diet, physical activity and overweight in the Nordic Plan of Action (see Table 94 and 95).

## Adults

Four in ten of the goals and one in ten of the visions in the Nordic Plan of Action seem to have been fulfilled among adults in the Nordic countries.

One goal that has been successfully fulfilled is the goal with regard to the intake of added sugar which decreased. In addition, the goals with regard to social inequality in diet, physical activity and overweight also seem to be fulfilled as social inequality in diet, physical activity and overweight did not change or decreased slightly.

However, the way goals on social inequality have been fulfilled was not always beneficial from a public health perspective. Social inequality in OB decreased through an increase in the prevalence of OB in the high education group. This is not encouraging when the ambitions are to achieve better health in all social groups.

The only vision that seems to be currently fulfilled is the one regarding whole grain bread intake among adults in the Nordic region. 95% has a daily intake of whole grain bread corresponding to at least half of their daily intake of bread and the target level is  $\geq 70\%$ . However, this vision needs a critical revision. The proportion eating at least half of their daily bread intake as whole grain bread is not necessarily a good indicator of the total intake of whole grain. Firstly, other sources of whole grain might be as important as bread in some countries, but not covered with NORMO data, and secondly, the whole grain bread variable shows quite high values even though the intake is low and decreasing, and the higher values can occur due to a lower intake of white bread. Therefore these results must be interpreted with caution.

Some of the visions may be possible to fulfill in 2021 such as the visions on the intake of added sugar, the target population level of physical activity and social inequality in physical activity and overweight, while other visions such as the intake of fruits and vegetables, fish, and saturated fat, the target prevalence of overweight and obesity and social inequality in diet will be difficult to reach in 2021.

## Children

The common Nordic ambitions of better health through diet and physical activity are better off for children than adults, but children also have a long way to go to get a healthier lifestyle and weight status (see Table 95). Seven in ten of the goals and three in ten of the visions in the Nordic Plan of Action seem to have been fulfilled among children in the Nordic region. Goals that have been successfully fulfilled are an increase in the intake of fish, and fruits and vegetables, and a decrease in the intake of added sugar. In addition, the level of physical activity and sedentary behaviour and the prevalence of OW/OB and OB did not change, why Goal 2011 has been fulfilled.

Finally, social inequality in physical activity and overweight developed in favorably among children in Nordic region. See however, the reservations made above in the adult section.

The visions that are currently fulfilled are the high successful intake of whole grain bread and the target difference of social inequality in physical activity and overweight. However, the same reservations have to be made to these conclusions since the visions need critical revision. The vision that may be possible to fulfill is the target prevalence of OB, while the visions on the intake of fruits and vegetables, fish, saturated fat and added sugar, target population level of physical activity, prevalence of OW/OB and social inequality in diet will be difficult to reach in 2021.

**Table 94: Evaluation of Goals 2011 and Visions 2021 for diet, physical activity and overweight in the Nordic Plan of Action among *adults* in the Nordic region. The goals and visions are shown in Appendix C**

	Goal 2011	Vision 2021
<i>Diet</i>	<p><i>Not fulfilled</i> because the intake of <i>fruits and vegetables</i> did not change (mean freq./day: from 2.6 in 2011 to 2.5 in 2014).</p> <p><i>Not fulfilled</i> because the intake of <i>fish</i> decreased slightly (mean freq./week: from 1.5 in 2011 to 1.5 in 2014).<sup>10</sup></p> <p><i>Not fulfilled</i> because the intake of <i>whole grain bread/cereals</i> decreased (mean slices/day: from 3.7 in 2011 to 3.3 in 2014). Needs revision.<sup>11</sup></p> <p><i>Not fulfilled</i> because the intake of <i>saturated fat</i> increased (proportion with a high intake of foods rich in saturated fat: from 39% in 2011 to 42% in 2014).</p> <p><i>Fulfilled</i> because the intake of <i>added sugar</i> decreased (proportion with a high intake of sugar-rich foods: from 30% in 2011 to 27% in 2014).</p>	<p>Currently <i>not fulfilled</i> because 13% has an intake of <i>fruits and vegetables</i> of at least 500 g/day and the target population level is <math>\geq 70\%</math>.</p> <p>Currently <i>not fulfilled</i> because 37% consume <i>fish</i> twice a week and the target population level is <math>\geq 70\%</math>.</p> <p>Currently <i>fulfilled</i> because 95% has a daily intake of <i>whole grain bread/cereals</i> corresponding to at least half of their daily intake of bread/cereals and the target population level is <math>\geq 70\%</math>. Needs revision.<sup>12</sup></p> <p>Currently <i>not fulfilled</i> according to other national estimates from the Nordic countries. Even if 64–83%<sup>13</sup> meet the NNR recommendation on <i>fat</i> (25–40 E% from fat) and the target population level is <math>\geq 70\%</math>, Vision 2021 is not fulfilled because the mean <i>saturated fat</i> intake of 13–15 E% does not meet the NNR recommendations (<math>&lt; 10</math> E%).<sup>13</sup></p> <p>Currently <i>not fulfilled</i> according to other national estimates from the Nordic countries because 63–76% meet the NNR recommendation on added sugar and the target population level is <math>\geq 80\%</math>.<sup>14</sup></p>

<sup>10</sup> A significant, but very small decrease corresponding to 0.07 times less intake of fish per week was found.

<sup>11</sup> Assessment of whole grain bread/cereals needs a critical revision since the variable shows quite high values even though the intake of whole grain bread is low and decreasing, and depending on the intake of white bread.

<sup>12</sup> Estimates from *Proportion with a diet of total fat 25–40 E% (%)* in 2010–2013 in Table 34.

<sup>13</sup> Estimates from *Saturated fat (E%)* in 2010–2013 in Table 34.

<sup>14</sup> Estimates from *Proportion with a diet < 10 E% added sugar (%)* in 2010–2013 in Table 34.

	Goal 2011	Vision 2021
<b>Table 94 Continued</b>		
<i>Physical Activity</i>	<i>Not fulfilled.</i> Even if the proportion of <i>inactive</i> did not change (from 33% in 2011 to 34% in 2014), Goal 2011 is not fulfilled because the proportions of <i>highly inactive</i> (from 11% in 2011 to 12% in 2014) and <i>with high recreational screen time</i> (from 29% in 2011 to 30% in 2014) increased.	Currently <i>not fulfilled</i> because 66% is <i>physically active</i> (meets the physical activity recommendations) and the target population level is $\geq 75\%$ .
<i>Overweight and Obesity</i>	<i>Not fulfilled.</i> Even if the prevalence of <i>OW/OB</i> did not change (47% in 2011 and 2014), Goal 2011 is not fulfilled because the prevalence of <i>OB</i> increased (from 11% in 2011 to 13% in 2014).	Currently <i>not fulfilled</i> because the prevalence of <i>OW/OB</i> and <i>OB</i> is 47% and 13%, respectively, and the target prevalence is 34% and 9%, respectively.
<i>Social inequality in diet</i>	<i>Fulfilled</i> because the <i>social difference in diet</i> did not change (social difference: from 54% in 2011 to 51% in 2014). <sup>15</sup> Needs revision. <sup>16</sup>	Currently <i>not fulfilled.</i> Vision 2021 is not fulfilled because the <i>social difference in diet</i> did not change and is 51% and the target difference is $\leq 20\%$ . Needs revision. <sup>18</sup>
<i>Social inequality in physical activity</i>	<i>Fulfilled</i> because the <i>social difference in physical activity</i> did not change (social difference: from 26% in 2011 to 22% in 2014). Needs revision. <sup>18</sup>	Currently <i>not fulfilled.</i> Vision 2021 is not fulfilled because the <i>social difference in physical activity</i> did not change and is 22%. and the target difference is $\leq 20\%$ . Needs revision. <sup>18</sup>
<i>Social inequality in overweight and obesity</i>	<i>Fulfilled</i> because the <i>social difference in OW/OB</i> (social difference: from 38% to 31%) and <i>OB</i> (social difference: from 93% to 61%) decreased. Needs revision. <sup>18</sup>	Currently <i>not fulfilled.</i> Even if the <i>social difference in OW/OB</i> decreased, Vision 2021 is not fulfilled because the <i>social difference in OW/OB</i> is 31% and the target difference is $\leq 20\%$ . Needs revision. <sup>18</sup>

**Table 95: Evaluation of Goals 2011 and Visions 2021 for diet, physical activity and overweight in the Nordic Plan of Action among children in the Nordic region. The goals and visions are shown in Appendix C**

	Goal 2011	Vision 2021
<i>Diet</i>	<i>Fulfilled</i> because the intake of <i>fruits and vegetables</i> increased slightly (mean freq./day: from 2.8 in 2011 to 2.9 in 2014).	Currently <i>not fulfilled</i> because 15% has an intake of <i>fruits and vegetables</i> of at least 500 g/day and the target population level is $\geq 70\%$ .
	<i>Fulfilled</i> because the intake of <i>fish</i> increased slightly (mean freq./week: from 1.3 in 2011 to 1.4 in 2014).	Currently <i>not fulfilled</i> because 42% consume <i>fish</i> twice a week and the target population level is $\geq 70\%$ .
	<i>Not fulfilled</i> because the intake of <i>whole grain bread/cereals</i> decreased (mean slices/day: from 3.3 in 2011 to 3.1 in 2014). Needs revision. <sup>17</sup>	Currently <i>fulfilled</i> because 88% has a daily intake of <i>whole grain bread/cereals</i> corresponding to at least half of their daily intake of bread/cereals and the target population level is $\geq 70\%$ Needs revision. <sup>19</sup>

<sup>15</sup> Relative difference in diet (unhealthy diet), physical activity (inactive), OW/OB and OB between the low and high education group.

<sup>16</sup> Goals and visions on social inequality need a critical revision because the way these have been fulfilled was not always beneficial from a public health perspective. Fulfillment of the goals and visions occurred sometimes through deteriorated health behaviour and health status in the high education group.

<sup>17</sup> Assessment of whole grain bread/cereals needs a critical revision since the variable shows quite high values even though the intake of whole grain bread is low and decreasing, and depending on the intake of white bread.



	Goal 2011	Vision 2021
<b>Table 95 Continued</b>		
	<i>Not fulfilled</i> because the intake of <i>saturated fat</i> did not change (proportion with a high intake of foods rich in saturated fat: 34% in 2011 and 2014).	Currently <i>not fulfilled</i> according to other national estimates from the Nordic countries. Even if 85–99% <sup>18</sup> meet the NNR recommendation on <i>fat</i> (25–40 E% from fat) and the target population level is ≥ 70%, Vision 2021 is not fulfilled because the mean <i>saturated fat</i> intake of 8–14 E% does not meet the NNR recommendations (< 10 E%). <sup>19</sup>
	<i>Fulfilled</i> because the intake of <i>added sugar</i> decreased (proportion with a high intake of sugar-rich foods: from 21% in 2011 to 19% in 2014).	Currently <i>not fulfilled</i> according to other national estimates from the other Nordic countries because 13–67% meet the NNR recommendation on <i>added sugar</i> and the target population level is ≥ 80%. <sup>20</sup>
<i>Physical Activity</i>	<i>Fulfilled</i> because the proportions of <i>inactive</i> (from 60% in 2011 to 59% in 2014) and <i>with high recreational screen time</i> (17% vs. 16%) did not change.	Currently <i>not fulfilled</i> because 41% is <i>physically active</i> (meets the physical activity recommendations) and the target population level is 100%.
<i>Overweight and Obesity</i>	<i>Fulfilled</i> because the prevalence of <i>OW/OB</i> (15% in 2011 and 2014) and <i>OB</i> (3.0% in 2011 and 2014) did not change.	Currently <i>not fulfilled</i> because the prevalence of <i>OW/OB</i> and <i>OB</i> is 15% and 3%, respectively, and the target prevalence is 9% and 2%, respectively.
<i>Social inequality in diet</i>	<i>Not fulfilled</i> because the <i>social difference in diet</i> increased considerably (social difference: from –10% in 2011 to 133% in 2014). <sup>21</sup> Needs revision. <sup>18</sup>	Currently <i>not fulfilled</i> because the <i>social difference in diet</i> increased considerably and is 133% and the target difference is ≤ 20%. Needs revision. <sup>18</sup>
<i>Social inequality in physical activity</i>	<i>Fulfilled</i> because the <i>social difference in physical activity</i> did not change (social difference: from 1% in 2011 to –5% in 2014). Needs revision. <sup>18</sup>	Currently <i>fulfilled</i> . Vision 2021 is fulfilled because the <i>social difference in physical activity</i> is 5% and the target difference is ≤ 20%. Needs revision. <sup>18</sup>
<i>Social inequality in overweight and obesity</i>	<i>Fulfilled</i> because the <i>social difference in OW/OB</i> (social difference: from 98% to 19%) and <i>OB</i> (social difference: from 345% to 148%) decreased considerably. Needs revision. <sup>18</sup>	Currently <i>fulfilled</i> because the <i>social difference in OW/OB</i> decreased considerably and is 19% and the target difference is ≤ 20%. Needs revision. <sup>18</sup>

<sup>18</sup> Estimates from *Proportion with a diet of total fat 25–40 E% (%)* in 2011–2014 in Table 35.

<sup>19</sup> Estimates from *Saturated fat (E%)* in 2011–2014 in Table 35. Only children in Norway have a mean saturated fat intake below the recommended level.

<sup>20</sup> Estimates from *Proportion with a diet < 10 E% added sugar (%)* in 2011–2014 in Table 35.

<sup>21</sup> Relative difference in diet (unhealthy diet), physical activity (inactive), OW/OB and OB between the low and high education group

## 11. Conclusion

The Nordic Monitoring System comprises data collected in autumn 2011 and 2014. Results from 2014 represent the most recent population levels on diet, physical activity, smoking, alcohol and overweight in the Nordic countries. The emphasis in presenting the results has been put on the key findings in the Nordic region, including in relation to gender, age groups and education level. Furthermore, emphasis has been put on showing the development of the key variables, but the population levels in 2014 and selected data on country level is also described.

The overall picture shows that one in five adults had an unhealthy diet in the Nordic region, while only one in 10 adults had a healthy diet in 2014. One in three adults were physically inactive and three in ten adults spent more than four hours daily on recreational screen time. Furthermore, one in five adults were smokers (daily or occasionally smokers) and one in seven were daily smokers in the Nordic region. Mean total alcohol consumption among adults was 1.7 times/week and the proportion of binge drinkers was 45%. Finally, the prevalence of OW/OB and OB among adults was high in the Nordic region. Today, it is almost as common to be overweight or obese as an adult as being normal weight.

The increase from 2011 to 2014 in OB prevalence and in the proportions with an unhealthy diet, of highly inactive and with high recreational screen time among adults in the Nordic region is of concern. Even so, an encouraging increase in the proportion of highly active was also found. These findings could indicate that an increased polarisation of the physical activity pattern is evident among adults in the Nordic region.

Results show that health behaviour and weight status, i.e. diet, sedentary behaviour, smoking, alcohol, OW/OB and OB, were less favorable among men than among women in the Nordic region.

There were no changes in diet, physical activity and overweight between 2011 and 2014 among children in the Nordic region. Although it is encouraging that the same unfavorable development was not seen for children as for adults, the high population levels in 2014 are of concern. Even though the proportion of children with an unhealthy diet was 15%, the proportion with a healthy diet was only 10%. The proportion of inactive children was approx. 60% and therefore very high. Also the prevalence of OW/OB and OB was relative high; and a halt in the development has previously been followed by a rise.

Gender differences in health behaviour and weight status are not as clear in children as in adults in the Nordic region. Diet and sedentary behaviour were less favorable among boys than among girls, whereas physical activity was less favorable among girls. Each of the five Nordic countries is challenged with some specific unfavorable population levels and/or development in health behaviour and/or weight status among adults and/or children compared to the other Nordic countries. However, there is still a need for improvements in all the Nordic countries in all areas, and the development among adults has mostly been unfavorable or unchanged, while the development has mostly been unchanged or favorable among children.

This is reflected in the evaluation of the results in relation to the Goals 2011 and Visions 2021 of the Nordic Plan of Action. The Goals 2011 aim at a favorable development in diet, physical activity and overweight, while the Visions 2021 aim at reaching a certain population level in 2021.

The goal of added sugar in the diet, "The intake of added sugar has been reduced", has been fulfilled among adults and children. Among adults this was mainly due to a reduction in the intake of cakes, while among children the reduction was mainly in candy and chocolate (Table 94 and 95 in the previous chapter and Table 96 and 97 on Appendix D).

In children, the four other goals that have been successfully fulfilled are: "The consumption of fruits and vegetables has increased", "The consumption of fish has increased", "The current trend, where an increasing proportion of children are physically inactive, has been brought to a halt and at best reversed", and "The continuing increase in the proportion of the overweight and obese children has stopped and at best reversed".

In addition, the goals with regard to social inequality in diet, physical activity and OW/OB also seem to be fulfilled since a decrease or no change in social inequality in diet, physical activity and overweight was found in both adults and children, except for children regarding diet. However, the way goals on social inequality have been fulfilled was not always beneficial from a public health perspective.

The only vision that seems to be currently fulfilled is the one regarding whole grain bread intake in both adults and children in the Nordic region. However, this vision needs a critical revision since the variable shows quite high values even though the intake of whole grain bread is low and decreasing. Further it is depending on the intake of white bread.

Some of the visions may be possible to fulfill in 2021 among adults in the Nordic region such as the visions on the intake of added sugar, the target population level of physical activity and social inequality in physical activity and overweight, while other visions such as the intake of fruits and vegetables, fish, and saturated fat, the target

population level of OW/OB and OB and social inequality in diet will be difficult to reach in 2021.

The same picture is seen among children in the Nordic region. However, the vision that may be possible to fulfill is the target prevalence of OB, while the visions on added sugar and the target population level of physical activity will be difficult to reach in 2021.

The Nordic Monitoring System has now collected data for 2011 and 2014. In this short three year period, significant changes have occurred in the Nordic region, albeit some are modest in magnitude. Some of the significant changes in the results may be due to natural variation influenced by, among other factors, participation rate. Thus, based on two data collections, three years apart, it is too early to make too firm interpretations of the situation and the development in the Nordic region. The Nordic monitoring has to be repeated before temporal trends may be interpreted more distinctly.

The strength of the Nordic Monitoring System is the high comparability between survey years, age groups, educational levels and countries. Other national surveys cannot provide such comparability. However before a third data collection is started, initiatives to improve response rate especially in some of the Nordic countries are needed.

In summary, the big picture of the changes from 2011 to 2014 in diet, physical activity and overweight shows that the development is heading in the wrong direction among adults in the Nordic region while the development among children is more positive, but improvements are still needed. A coming third data collection would show if these tendencies will continue or if public health initiatives that target diet, physical activity and overweight among adults and children in the Nordic region will succeed in introducing improvements that leads to a healthier lifestyle and weight status. Men, 45–65-y-olds and the low educated may be especially relevant groups to target to fulfill the common Nordic ambition of ensuring better health and quality of life on equal terms for all Nordic citizens.



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# Sammenfatning

## Baggrund og formål

Monitorering af kost, fysisk aktivitet og overvægt i Norden er en vigtig del af Den nordiske handlingsplan for bedre sundhed og livskvalitet gennem mad og fysisk aktivitet fra Nordisk Ministerråd. Nærværende rapport beskriver den anden dataindsamling i 2014 og præsenterer status og udvikling fra 2011 til 2014. Resultaterne bliver evalueret i forhold til målene for 2011 og visionerne for 2021 i Den nordiske handlingsplan.

Formålet med Det nordiske monitoreringssystem er at indsamle data, der beskriver status og udvikling for kost, fysisk aktivitet og overvægt blandt voksne og børn i Norden. Derudover kan data bruges til at sammenligne resultaterne mellem de nordiske lande og sammenligne med anbefalinger for kost og fysisk aktivitet samt undersøge social ulighed i kost, fysisk aktivitet og overvægt. Endelig kan resultaterne evalueres i forhold til Den nordiske handlingsplans mål og visioner for at indikere, hvorvidt kost, fysisk aktivitet og overvægt ændres i ønskeværdig retning eller ej.

Fra 2014 er alkoholforbrug og rygevaner blandt voksne inkluderet i dataindsamlingen, hvilket gør det muligt også at sammenligne disse sundhedsindikatorer mellem de nordiske lande.

## Metode

Data for kost, fysisk aktivitet og overvægt er blevet indsamlet i 2011 og 2014 blandt i alt 17.775 voksne i alderen 18–65 år og 4.949 børn i alderen 7–12 år i Danmark, Finland, Sverige, Island og Norge. En simpel tilfældig stikprøve af voksne og børn blev udtrukket fra de nationale populationsregistre i hvert af de fem nordiske lande. Data er indsamlet gennem telefoninterviews ved hjælp af et spørgeskema med validerede indikatorspørgsmål om kost, fysisk aktivitet og stillesiddende adfærd. Herudover er data indsamlet for højde og vægt (selvrapporteret) og enkelte sociodemografiske spørgsmål samt for voksnes alkoholforbrug og rygevaner. Data blev kontrolleret og oparbejdet af DTU Fødevareinstituttet, som også gennemførte de statistiske analyser.

Data er vægtet i forhold til køn, alder og uddannelse. Brug af vægtede data introducerer mindre ændringer i forhold til tidligere publicerede resultater fra 2011.

Antallet af voksne deltagere i 2014 var 8.622. Den samlede svarprocent for voksne i hele Norden var 32%. I 2014 deltog der 2.479 børn og den samlede svarprocent var 45%. Blandt voksne var svarprocenten lavere i 2014 end 2011 (40% vs. 32%), mens der ingen ændring var blandt børn (45% vs. 45%).

## Resultater

Resultaterne præsenteres i fem kapitler om kost, fysisk aktivitet og stillesiddende adfærd, overvægt og svær overvægt, alkohol og rygning. Det efterfølgende kapitel giver et overblik over og en diskussion af resultaterne.

Der er lagt vægt på at beskrive hovedresultaterne i Norden og i forhold til køn, alder og uddannelse. Fokus i rapporten er lagt på at beskrive status og udvikling fra 2011 til 2014 for følgende nøglevariable: usund kost, inaktive, høj skærmtid i fritiden, overvægt eller svær overvægt og svær overvægt, og for voksne i 2014: rygere, daglige rygere, totalt alkohol forbrug og binge drinking den sidste måned. Nøglevariablene er udvalgt for at kunne evaluere målene for 2011 og visionerne for 2021 i Den nordiske handlingsplan for bedre sundhed og livskvalitet gennem kost og fysisk aktivitet. Variablene kan bidrage til at identificere de grupper i Norden, der formentligt vil drage mest fordel af en sundere livsstil og vægtstatus. Identifikationen af risikogrupper er et vigtigt redskab for de nordiske lande, da de gennem handlingsplanen for bedre sundhed og livskvalitet har forpligtet sig til at fremme en sundere livsstil i Norden.

Udvalgte data på landeniveau vurderes også i forhold til hvilket land, der har den mest eller mindst favorable position, hvad angår sund/usund adfærd og vægtstatus. Endelig er resultaterne evalueret i forhold til målene for 2011 og visionerne for 2021 i Den nordiske handlingsplan for bedre sundhed og livskvalitet.

### *Status og udvikling i Norden fra 2011 til 2014*

Hovedresultaterne viser, at andelen af voksne i Norden med usund kost var højere end 20% og er øget fra 2011 til 2014, mens andelen med sund kost er faldet og kun var 10% i 2014. Hvorvidt kosten er sund eller usund er målt ved hjælp af en kostkvalitetsscore, som baseres på indtaget af frugt og grønt, fisk, fuldkornsbrød og fødevarer, som er rige på mættet fedt eller tilsat sukker. Blandt voksne i Norden er der kun set en gunstig udvikling i andelen med et højt indtag af fødevarer rige på tilsat sukker. Denne andel er også faldet i Danmark, Finland og Norge, men ikke i Sverige og Island. For de øvrige

kostfaktorer har udviklingen ikke været gunstig, undtaget indtaget af frugt og grønt, som ikke ændrede sig i Norden, men som steg i Finland og Sverige, var uændret i Danmark og Island og faldt i Norge.

Hver tredje voksne i Norden var fysisk inaktiv og tre ud af ti brugte mere end 4 timer dagligt på stillesiddende skærmtid i fritiden. Derudover var forekomsten af overvægt/svær overvægt og svær overvægt høj blandt voksne. Således er det i dag næsten lige så almindeligt at være overvægtig/svært overvægtig som normalvægtig i Norden. Ydermere er stigningen i forekomsten af svær overvægt og i andelen med usund kost, meget inaktive eller høj skærmtid i fritiden blandt voksne bekymrende. Dog ses der også en lovende stigning i andelen af meget fysisk aktive, hvilket kunne tyde på en stigende polarisering af det fysiske aktivitetsmønster blandt voksne i Norden.

Udviklingen i alkoholforbruget og rygning kan ikke beskrives, da disse data kun er indsamlet i Det nordiske monitoreringssystem i 2014. Blandt voksne i Norden er det gennemsnitlige alkoholindtag 1,7 gange om ugen og andelen, der drikker fem eller flere genstande ved én lejlighed er 45% (binge-drinking). Andelen af rygere er 21% og andelen af daglige rygere er 14%.

Resultaterne viser, at sundhedsadfærd og vægtstatus, dvs. kost, stillesiddende adfærd, rygning, alkohol, overvægt og svær overvægt er mindre gunstig blandt mænd end blandt kvinder i Norden.

Blandt børn i Norden ses der ingen ændringer i kost, fysisk aktivitet og overvægt fra 2011 til 2014. Ligesom for voksne ses der en gunstig udvikling i Norden i andelen af børn med et højt indtag af fødevarer rige på tilsat sukker, selvom der ikke ses ændringer i de fem nordiske lande. Derudover steg indtaget af frugt og grønt og fisk i Norden.

Selvom det er lovende, at udviklingen blandt børn i Norden ikke går i samme retning som for voksne, så er de høje andele af børn med usund kost, som er fysisk inaktive eller er overvægtige i 2014 bekymrende. Skønt andelen af børn med usund kost var 15%, så var andelen med en sund kost kun 10%. Andelen af fysisk inaktive var ca. 60% og derfor meget høj. Også forekomsten af overvægt eller svær overvægt er relativ høj (15%) og en stagnation i udviklingen er tidligere blevet efterfulgt af en stigning.

Kønsforskelle i sundhedsadfærd og vægtstatus er ikke lige så tydelige blandt børn som blandt voksne i Norden. Dog er der flere drenge end piger med usund kost og med stillesiddende adfærd. Derimod er andelen af fysisk inaktive højere blandt piger end blandt drenge.

### *Udfordringer i folkesundheden i de nordiske lande*

Sammenligning mellem de nordiske lande viser, at hvert land er udfordret med ugunstige befolkningsniveauer og/eller udvikling i sundhedsadfærd og/eller vægtstatus



blandt voksne og/eller børn. Danmark er udfordret med ugunstige ryge- og alkoholvaner blandt voksne. Stillesiddende adfærd kan være en stigende folkesundhedsudfordring blandt voksne i Finland, eftersom stigningen i høj skærmtid i fritiden er bekymrende. Befolkningsniveauet og udviklingen i andelen med usund kost i Sverige er bekymrende, især blandt voksne. Derudover udgør den høje andel inaktive børn i Sverige et folkesundhedsproblem, selvom der ikke er set ændringer fra 2011 til 2014. Niveauet af og udviklingen i andelen af både overvægtige og svært overvægtige blandt voksne i Island er et stort folkesundhedsproblem. I Norge vækker den høje andel af inaktive voksne bekymring, selvom der ikke set ændringer fra 2011 til 2014.

Der er således fortsat plads til forbedring i alle nordiske lande indenfor bestemte områder og udviklingen blandt voksne har primært været ugunstig eller uændret i de enkelte lande, hvorimod udviklingen blandt børn har været gunstig eller uændret.

#### *Evaluering af målene for 2011 og visionerne for 2021 for kost, fysisk aktivitet og overvægt*

Evaluering af hovedresultaterne i forhold til målene for 2011 og visionerne for 2021 i Den nordiske handlingsplan for bedre sundhed og livskvalitet afspejler status og udviklingen i Norden. Planen sætter mål for en gunstig udvikling i forhold til kost, fysisk aktivitet og overvægt, mens visionerne fokuserer på at nå et konkret niveau i befolkningen i 2021.

Målet vedrørende tilsat sukker: "Indtaget af tilsat sukker er mindsket" er opfyldt blandt voksne og børn i Norden.

Blandt børn er fire andre mål blevet opfyldt: "Indtaget af frugt og grønt er steget", "Indtaget af fisk er steget", "Stigningen i andelen af fysisk inaktive er stoppet eller i bedste fald vendt" og "Den fortsatte stigning i andelen af overvægtige og svært overvægtige børn er stoppet eller i bedste fald vendt".

Derudover er målene om social ulighed i kost, fysisk aktivitet og overvægt tilsyneladende også opfyldt, idet der ses et fald eller ingen ændring i social ulighed blandt voksne og børn indenfor alle tre områder, undtaget for børn med hensyn til kost. Dog er den sociale ulighed primært faldet, fordi sundhedsadfærd og vægtstatus er blevet dårligere i den højeste uddannelsesgruppe.

Den eneste vision som pt. er opfyldt både blandt voksne og børn i Norden er indtaget af fuldkornsbrød. Visionen om indtaget af fuldkornsbrød bør dog revideres, idet visionen i sin nuværende ordlyd er afhængig af indtaget af hvidt brød.

## *Konklusion*

I Det nordiske monitoreringssystem er der indsamlet data i 2011 og 2014. I denne treårige periode er der sket signifikante ændringer i Norden, om end nogle af ændringerne er små. Visse af ændringerne kan dog skyldes naturlig variation som følge af bl.a. lav svarprocent. Baseret på to dataindsamlinger med tre års mellemrum er det derfor for tidligt at drage for håndfaste konklusioner om udviklingen i Norden. Dataindsamlingen bør gentages før udviklingstendenser kan tolkes mere sikkert.

Styrken ved Det nordiske monitoreringssystem er sammenligneligheden af data mellem undersøgelsesår, alders og uddannelsesgrupper og mellem de enkelte lande. Andre nationale undersøgelser kan ikke tilvejebringe denne sammenlignelighed, da målemetoder, undersøgelsesår og alders- og uddannelsesgrupper varierer. Men før en tredje dataindsamling påbegyndes, er der behov for at forbedre svarprocenten i flere nordiske lande. Derudover bør visse nøglevariable, der anvendes i evalueringen af målene og visionerne i Den nordiske handlingsplan revideres kritisk.

Blandt voksne i Norden vil nogle af visionerne for 2021 være mulige at opfylde, bl.a. visionen om indtaget af tilsat sukker, befolkningsniveauet af fysisk aktive og forskellene i social ulighed i fysisk aktivitet og overvægt, mens andre visioner angående indtaget af frugt og grønt, fisk og mættet fedt, befolkningsniveauet af overvægt og svær overvægt og forskellen i social ulighed i kost vil være svære at opfylde i 2021.

Blandt børn i Norden er befolkningsniveauet af svær overvægt den eneste vision, som det er muligt at opfylde i 2021, mens visionerne om indtaget af tilsat sukker, befolkningsniveauet af fysisk aktive og visionerne om indtaget af frugt og grønt, fisk og mættet fedt samt befolkningsniveauet af overvægt og forskellen i social ulighed i kost vil være svære at opfylde.

Samlet set viser resultaterne, at udviklingen fra 2011 til 2014 i kost, fysisk aktivitet og overvægt går i den forkerte retning blandt voksne i Norden, mens udviklingen blandt børn er mere lovende, men med plads til forbedringer. En tredje dataindsamling vil vise om de udviklingstendenser, der er fundet vil fortsætte eller om sundhedsfremmende initiativer indenfor kost, fysisk aktivitet og overvægt kan føre til en sundere livsstil og vægtstatus blandt voksne og børn i Norden. Mænd, 45–65-årige og kort uddannede er særligt relevante grupper at målrette folkesundhedsinitiativer mod for at opfylde den fælles nordiske ambition om at sikre bedre sundhed og livskvalitet og lighed for alle nordiske borgere.



## Appendix A: Questionnaire

The questionnaire used in adults (18–65 y) and children (7–12 y) are shown in the following pages. The questionnaire is developed to be used as computer assisted telephone interview (CATI) and therefore the look of the questionnaire is dependent on the system used for CATI. A preliminary suggestion on coding is shown. Text in bold is read out aloud, while text in *Italics* normally is information for the interviewer.

Figure 11: Questionnaire Adult

<b>Diet and physical activity of Nordic adults</b> English Master questionnaire August 2014	
Date of interview _____ Name of interviewer, identification number of respondent etc.	
Q0	Registration of the sex of the interviewed person  Male ..... <input type="checkbox"/> 1  Female ..... <input type="checkbox"/> 2
Q1	A. What is your date of birth ?  1A Month <input type="text"/> <input type="text"/> 1B Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (19  <b>January =01</b> <b>February=02</b> <b>May =03</b> <b>Etc.</b>

**Q2. What is your education<sup>1</sup>?**

- |  |                            |
|--|----------------------------|
| Basic education<br>10 years or less  | <input type="checkbox"/> 1 |
| Vocational education/ Practical - Upper secondary education<br>approx. 1-3 years after Basic education       | <input type="checkbox"/> 2 |
| Theoretical Upper Secondary education<br>approx. 2-3 years after Basic education                             | <input type="checkbox"/> 3 |
| Short higher education – not vocational or practical<br>approx. 1-2 years after basic or secondary education | <input type="checkbox"/> 4 |
| Medium higher<br>approx. 3-4 years after secondary education   | <input type="checkbox"/> 5 |
| Long higher education<br>approx. 5+ years after secondary education  | <input type="checkbox"/> 6 |

<sup>1</sup> Combined school and further education. The education has to be completed.

**Q3. Which description explains best where you live?**

(Place only one cross)

- |   |                          |   |
|---|--------------------------|---|
| The Capital and suburb.....                       | <input type="checkbox"/> | 1 |
| A large city (more than 50.000 inhabitants) ..... | <input type="checkbox"/> | 2 |
| A city of between 20.000 – 49.999 inhabitants...  | <input type="checkbox"/> | 3 |
| A town between 1000 – 19.999 inhabitants.....     | <input type="checkbox"/> | 4 |
| Country side.....                                 | <input type="checkbox"/> | 5 |
| Do not know .....                                 | <input type="checkbox"/> | 8 |

**Q4. Do you live together with anyone? (multiple responses possible)**

1= Yes, 0=No

- |   |                          |               |
|---|--------------------------|---------------|
| 4.1 Yes, with spouse/partner or cohabite        | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.2 Yes, with mother/father/parents             | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.3 Yes, with kids living at home (kids < 18 y) | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.4 Yes, with kids living at home (≥18 y)       | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.5 Yes, with others                            | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.6 No I live alone                             | <input type="checkbox"/> | 1=Yes, else 0 |

4.6 (Single Response only) If 4.6= 1 → go to question 6

**Q5. How many people live in your household including yourself?**

number of persons in the  
household

(Must be at least 2)

**Q6. How tall are you?**

cm.

Do not know ..... ☐ 998

Refuse ..... ☐ 997

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**Q7. How much do you weigh? (for pregnant women: the weight before pregnancy)**

kg.

Do not know ..... ☐ 998

Refuse ..... ☐ 997

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The following questions regard what you usually eat. Please keep the last 12 months in mind when you respond to the questions. You have to keep in mind what you eat *most often*

- 8 What type of spread/grease do you usually put on your bread? If you use more than one kind, respond to what you use the most.

*If the respondent mentions butter, ask if he/she means butter or Kærgården/similar.*

*If the respondent is in doubt whether she/he uses margarine or vegetable margarine, ask if the grease comes in paper wrapping or in a container (if national relevance)*

- 1 ☐ Butter
- 2 ☐ Oil-butter spreads, Kærgården, Bakkedal, Marklyst, Mælkebøtte, Butter Bar
- 3 ☐ Vegetable margarine 60-80%
- 4 ☐ Low fat margarine ('Lätta', 'Becel', 38% fat)
- 5 ☐ 'Becel Pro-Activ'
- 6 ☐ Margarine 70-80%
- 7 ☐ Fat (pig or duck, coco)
- 8 ☐ Do not use spread/grease/fat on bread
- 98 ☐ Do not know

- 9 What type of fat, eg. butter, margarine or oil, do you usually use for domestic cooking? If you use more than one kind, respond regarding to what you use most.

*If the respondent mentions butter, ask if he/she means butter or 'Kærgården'/ similar.*

*If the respondent is in doubt whether she/he uses margarine or vegetable margarine, ask if the grease comes in a paper wrapper or in a container (if national relevance)*

- 01 ☐ Butter
- 02 ☐ Oil-butter spreads, Kærgården, Bakkedal, Marklyst, Mælkebøtte, Lurpak butter bar
- 03 ☐ Frying or baking margarine 70-80% fat
- 04 ☐ Vegetable margarine 60-80% fat
- 05 ☐ Fluid margarine, oil-margarine (eg 'Becel', 'Lise')
- 06 ☐ Oil (eg. rapeseed oil, olive oil, corn oil, sunflower oil, grapeseed oil, salad oil etc)
- 07 ☐ Use a mixture of oil and butter/Kærgården
- 08 ☐ Fat (pig, duck)
- 09 ☐ Do not use spread/grease/fat for cooking
- 10 ☐ We do not cook/prepare food in our household
- 11 ☐ Kasvisterolimargariinia (esim. Becel ProActivem Benecol (only Finland))
- 98 ☐ Do not know

10 How many slices of bread do you eat per day or per week?

**Answer according to slice/piece/½ roll**

*Grain bread also includes wholemeal bread, full grain bread and might carry the wholegrain label.  
Rolls are also considered bread.*

	Slice/piece/½ roll	
	A.per day	B.per week
	<i>or</i>	
<b>10.1</b>		
Rye Bread (( <b>Not to be asked in Sweden</b> ))		
How many slices of rye bread do you eat?		
Never eat 97	<input type="text"/>	<input type="text"/>
Do not know 98		
<b>10.1a per day</b>		
<b>10.1b per week</b>		
<b>10.2</b>		
White Bread or Wholegrain (not rye bread):		
How many slices of whole grain bread, with grain do you eat?	<input type="text"/>   <input type="text"/>	
Never eat 97		
Do not know 98		
<b>10.2a per day</b>		
<b>10.2b per week</b>		
<b>10.3</b>		
How many slices of white bread, toastbread, ciabbata do you eat?	<input type="text"/>	<input type="text"/>
Never eat 97		
Do not know 98		
<b>10.3a per day</b>		
<b>10.3b per week</b>		
<b>10.4</b>		
How many slices of hard bread do you eat?	<input type="text"/>	<input type="text"/>
Never eat 97		
Do not know 98		
<b>10.4a per day</b>		
<b>10.4b per week</b>		

Code 99 if unanswered



**11** How often do you eat fruit and vegetables during a day, a week or a month. If you do not eat fruit and vegetables every day, please think about how often you eat it in a week or in a month. Think about the last 12 months when you respond.

*Please respond to both sub questions, but only one response (cross, X) on each row*

Do not count small portions, eg. a slice of cucumber on bread, parsley as decoration, berries on cake etc.

	11.1a Times per month				11.1b Times per week						11.1c Times per day					
	<1	1	2	3	1	2	3	4	5	6	1	2	3	4	5	6 or more
<b>11.1</b> <b>1</b> How often do you eat vegetables, pulses and/or root fruits (includes fresh, frozen, canned, glass/potted etc) <b>DO NOT COUNT POTATOES</b> It is vegetables such as carrots, tomatoes, cucumber, broccoli, peppers, salad, beans, chick peas, lentils, beetroot, celery and parsnip.  Try also to include dishes that have vegetables in them, such as mixed salad, mixed vegetables, fried vegetables, vegetable soup and stews.	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
	Dont Know=8 None= 7															

<p><b>12 Now I will ask you how you eat and drinks a selection of food. Please consider the past 12 months when you answer these questions.</b></p> <p>Please answer all questions, but only cross one box on each row</p>															
		A Times per month				B Times per week						C Times per day			
		<1*	1	2	3	1	2	3	4	5	6	1	2	3	4 or more
<b>How often do you eat/drink?</b>		0	1	2	3	1	2	3	4	5	6	1	2	3	4
12.01	<b>French fries, roasted/fried potatoes</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.02	<b>Fish and shellfish as main course</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.03	<b>Sausage as a main course</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.04	<b>Chocolate and/or candy</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.05	<b>Cake, biscuits, tart etc.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.06	<b>Full fat cheese (45-60+ or 24-44% fat)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.07	<b>Low fat/sugar-free fizzy drinks, cordial, ice-tea, light or sugar free drinks</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.08	<b>Normal fizzy drinks, cordial, ice-tea</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.09	<b>Energy drinks, red bull, cult etc.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.10	<b>Fruit juice or Vegetable Juice</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Dont Know=8 None= 7													

**The next questions regard your physical activity**

[Comment: *The interviewer reads two to three examples of physical activities. Additional examples are in italics and if the respondents have difficulties in answering, the interviewer can add some of these additional examples on request. Generally the interviewer does not read the text in italics but can use the text as a reminder or can read it on request.*]

**I am going to ask you about your physical activity during the last 7 days. Your information is important even if you have not been physically active.**

13a. **Do you work, attend school or university?** 1 ☐ Yes 5 ☐ No

**Filter:**

If No (5) in question 13a → go to question 14

**13b Which one of the following descriptions best fits your occupation, or school hours?**

*Do not include travel to and from work or school*

- (1) **Mostly sedentary work like office work** ☐ 1  
*Additional examples are cashier in a store or in a bank, and light manual work*
- (2) **Work that requires a lot of walking like teaching** ☐ 2  
*Additional examples are shop assistant, light industrial work*
- (3) **Work that requires a lot of walking and lifting, like a nurse** ☐ 3  
*Additional examples are heavy industrial work*
- (4) **Heavy manual labour like heavy construction** ☐ 4  
*Additional examples are heavy farm work, heavy forestry*

[Question 14 (moderate or harder activity)]

**Next, I am going to ask you about all physical activity during your leisure time and active transportation e.g. commuting to and from work or school. include PA while running errands. Include all activity where the physical effort is moderate or harder, that is, you should include both moderate and vigorous activity. This kind of activity accelerates heart rate and breathing. Examples are brisk walking, running and heavy gardening.**

*Additional examples are Nordic walking, bicycling, and golf; these examples can be country specific.*

Q14

**During the last 7 days, how much time in total did you spend in physical activity where the physical effort was moderate or harder and lasted for at least 10 min each time? Estimate to the nearest half an hour.**

*The interviewer can help the respondent to narrow down the answer to the nearest half hour. It is important to know if physical activity is less or more than 150 min (2½ h) and if it is more or less than 300 min (5 h)*

Hours.....  
Minutes.....  
DK (Dont Know)


98

[Question 15 (vigorous activity)]

Q15

**Next, I am going to ask you how much of the physical activity you indicated in the last question, was vigorous. This kind of activity causes substantial increase in heart rate and sweating, as well as rapid breathing that makes it difficult to talk.**

**Examples are running or playing soccer** *Additional examples are fast bicycling, badminton or tennis, and cross-country skiing; these examples can be country specific.*

**During the last 7 days, how much time in total did you spend during leisure time in vigorous physical activity that lasted for at least 10 min each time? Estimate to the nearest half hour.**

*The interviewer can help the respondent to narrow down the answer to the nearest half hour. It is important to know if physical activity is less or more than 75 min (1 h and 15 min) and if it is more or less than 150 min (2½h)*

Hours.....  
Minutes.....  
DK (Dont Know)


98

[Question 16a (Sedentary time: TV watching)]

**Interviewer: During the last 7 days, how much time per day on average did you spend sitting and watching TV during your leisure time? Estimate it to the nearest half hour. Include videos, DVD and console games (PlayStation, Xbox, etc) played on TV screen.**

*The interviewer can help the respondent to narrow down the answer to the nearest half hour. It is important to know if average time is less or more than 1 hour and if it is more or less than 2½ hours*

Hours.....  
Minutes.....  
DK (Dont Know)


98

Question 18	<p><b>Now I will ask you how often you drink a selection of beverages. Please consider the past 12 months when you answer these questions.</b></p> <p>Please answer all questions, but only cross one box on each row</p>																
		Never	Times per year		Times per month			Times per week						Times per day			
			1-5	6-11	1	2	3	1	2	3	4	5	6	1	2	3	4 or more
11	Beer*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Wine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Spirits**	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*Including cider with 4-5% alcohol content

\*\*Including long drinks, alcopops

Question 18a	<p><b>During the previous month, how many times have you had five or more units of alcohol at a single occasion?</b></p> <p>Number of times..... <input type="checkbox"/></p>
--------------	---

A unit of alcohol could be:

1 beer = 1 unit

1 alcopop = 1 unit

1 glass of wine = 1 unit a bottle of wine = 6 unit

1 shot of liquor or spirit = 1 unit

Question 19	Do you <u>currently</u> smoke tobacco on a daily basis, less than daily or not at all?		
Daily	<input type="checkbox"/>	1	End section
Less than daily	<input type="checkbox"/>	2	Go to 19a
Not at all	<input type="checkbox"/>	3	Go to 19b
Don't know	<input type="checkbox"/>	8	End section

Question 19a	Have you smoked tobacco <u>daily</u> in the past?
--------------	---

Yes	<input type="checkbox"/>	1	End section
No	<input type="checkbox"/>	2	End section
Don't know	<input type="checkbox"/>	8	End section

Question 19 b In the <u>past</u> , have you smoked tobacco on a daily basis, less than daily or not at all?			
Daily	<input type="checkbox"/>	1	
Less than daily	<input type="checkbox"/>	2	
Not at all	<input type="checkbox"/>	3	
Don't know	<input type="checkbox"/>	8	

Question 20 Do you <u>currently</u> use snuff on a daily basis, less than daily or not at all? (not relevant for Denmark)			
Daily	<input type="checkbox"/>	1	End section
Less than daily	<input type="checkbox"/>	2	Go to 20a
Not at all	<input type="checkbox"/>	3	Go to 20b
Don't know	<input type="checkbox"/>	8	End section

Question 20a Have you used snuff <u>daily</u> in the past? (not relevant for Denmark)			
Yes	<input type="checkbox"/>	1	End section
No	<input type="checkbox"/>	2	End section
Don't know	<input type="checkbox"/>	8	End section

Question 20b In the <u>past</u> , have you used snuff on a daily basis, less than daily or not at all? (not relevant for Denmark)			
Daily	<input type="checkbox"/>	1	
Less than daily	<input type="checkbox"/>	2	
Not at all	<input type="checkbox"/>	3	
Don't know	<input type="checkbox"/>	8	

Figur 12: Questionnaire Children

<b>Diet and physical activity of Nordic children</b> <b>English Master questionnaire August 2014</b> <b>(no changes from 2011-version)</b>	
<i>Date of interview</i> _____ <i>Name of interviewer, identification number of respondent etc.</i> _____	
Q0	<b>Registration of the sex of the interviewed person</b>  Male ..... <input type="checkbox"/> 1  Female ..... <input type="checkbox"/> 2
Q1	<b>A. What is your child's date of birth ?</b>  Q1A Month <input type="text"/> <input type="text"/> Q1B. Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>  <b>January =01</b> <b>February=02</b> <b>May =03</b> <b>Etc.</b>  <b>Q1C. What is your child's sex?</b> Boy ..... <input type="checkbox"/> 1 Girl ..... <input type="checkbox"/> 2  <b>Q1C open : What is the child's pet name? Write here:</b> _____  <b>Q1D. Are you the child's:</b> Mother/Stepmother ..... <input type="checkbox"/> 1 Father/Stepfather ..... <input type="checkbox"/> 2 Other, write the relationship here: _____
<b>B.</b>	

**Q2. What is your education<sup>1</sup>?**

- |   |                            |
|---|----------------------------|
| Basic education<br><i>10 years or less</i>  | <input type="checkbox"/> 1 |
| Vocational education/ Practical - Upper secondary education<br><i>approx. 1-3 years after Basic education</i>       | <input type="checkbox"/> 2 |
| Theoretical Upper Secondary education<br><i>approx. 2-3 years after Basic education</i>                             | <input type="checkbox"/> 3 |
| Short higher education – not vocational or practical<br><i>approx. 1-2 years after basic or secondary education</i> | <input type="checkbox"/> 4 |
| Medium higher<br><i>approx. 3-4 years after secondary education</i>   | <input type="checkbox"/> 5 |
| Long higher education<br><i>approx. 5+ years after secondary education</i>  | <input type="checkbox"/> 6 |

**Q3. Which description explains best where you live?**

(Place only one cross)

- |   |                          |   |
|---|--------------------------|---|
| The Capital and suburb.....                       | <input type="checkbox"/> | 1 |
| A large city (more than 50.000 inhabitants) ..... | <input type="checkbox"/> | 2 |
| A city of between 20.000 – 49.999 inhabitants...  | <input type="checkbox"/> | 3 |
| A town between 1000 – 19.999 inhabitants.....     | <input type="checkbox"/> | 4 |
| Country side.....                                 | <input type="checkbox"/> | 5 |
| Do not know .....                                 | <input type="checkbox"/> | 8 |

---

<sup>1</sup> Combined school and further education. The education has to be completed.



**Q4. Do you live together with anyone? (multiple responses possible)**

1= Yes, 0=No

- |  |                          |               |
|--|--------------------------|---------------|
| 4.1 Yes, with spouse/partner or cohabite         | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.2 Yes, with mother/father/parents              | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.3 Yes, with kids living at home (kids < 18 y)  | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.4 Yes, with kids living at home ( $\geq 18$ y) | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.5 Yes, with others                             | <input type="checkbox"/> | 1=Yes, else 0 |
| 4.6 No I live alone                              | <input type="checkbox"/> | 1=Yes, else 0 |

4.6 (Single Response only) If 4.6= 1 → go to question 6

**Q5. How many people live in your household including yourself?**

number of persons in the  
household

(Must be at least 2)

Q6. How tall is your child?

\_\_\_\_\_ cm.

Do not know ..... ☐ 998

No response ..... ☐ 997

Q7. How much does your child weigh?

\_\_\_\_\_ kg.

Do not know ..... ☐ 998

No response ..... ☐ 997

The following questions regard what your child usually eat. Please keep the last 12 months in mind when you respond to the questions. You have to keep in mind what your child eats **most often** (if national relevance)

Q What type of spread/grease do your child usually put on his/hers bread? If your child use more than  
8 one kind, respond to what your child uses the most.

*If the respondent mentions butter, ask if he/she means butter or Kærgården/similar.*

*If the respondent is in doubt whether the child uses margarine or vegetable margarine, ask if the grease comes in paper wrapping or in a container*

- 1 ☐ Butter
- 2 ☐ Oil-butter spreads, Kærgården, Bakkedal, Marklyst, Mælkebøtte, Butter Bar
- 3 ☐ Vegetable margarine 60-80%
- 4 ☐ Low fat margarine ('Lätta', 'Becel', 38% fat)
- 5 ☐ 'Becel Pro-Activ'
- 6 ☐ Margarine 70-80%
- 7 ☐ Fat (pig or duck)
- 8 ☐ Do not use spread/grease/fat on bread
- 98 ☐ Do not know

**9 What type of fat, eg. butter, margarine or oil, do you usually use for domestic cooking?**  
If you use more than one kind, respond regarding to what you use most. *(if national relevance)*

If the respondent mentions butter, ask if he/she means butter or 'Kærgården'/ similar.

If the respondent is in doubt whether she/he uses margarine or vegetable margarine, ask if the grease comes in a paper wrapper or in a container

- 01 ☐ Butter
- 02 ☐ Oil-butter spreads, Kærgården, Bakkedal, Marklyst, Mælkebøtte, Lurpak butter bar
- 03 ☐ Frying or baking margarine 70-80% fat
- 04 ☐ Vegetable margarine 60-80% fat
- 05 ☐ Fluid margarine, oil-margarine (eg 'Becel', 'Lise')
- 06 ☐ Oil (eg. rapeseed oil, olive oil, corn oil, sunflower oil, grapeseed oil, salad oil etc)
- 07 ☐ Use a mixture of oil and butter/Kærgården
- 08 ☐ Fat (pig, duck)
- 09 ☐ Do not use spread/grease/fat for cooking
- 10 ☐ We do not cook/prepare food in our household
- 11 ☐ Kasvisterolimargariinia (esim. Becel ProActivem Benecol *(only Finland)*)
- 98 ☐ Do not know

**10** How many slices of bread does your child eat per day or per week?

Answer according to slice/piece/½ roll

*Grain bread also includes wholemeal bread, full grain bread and might carry the wholegrain label.  
Rolls are also considered bread.*

	Slice/piece/½ roll	
	per day	per week
	or	
<b>Rye Bread</b>		
<b>Q10.1</b>		
How many slices of rye bread does your child eat?		
Never eat 97	<input type="text"/>	<input type="text"/>
Do not know 98		
10.1a per day		
10.1b per week		
<b>White Bread or Wholegrain (not rye bread):</b>		
<b>Q10.2</b>		
How many slices of whole grain bread, with grain does your child eat?	<input type="text"/>	<input type="text"/>
Never eat 97		
Do not know 98		
10.2a per day		
10.2b per week		
<b>Q10.3</b>		
How many slices of white bread, toastbread, ciabbata does your child eat?	<input type="text"/>	<input type="text"/>
Never eat 97		
Do not know 98		
10.3a per day		
10.3b per week		
<b>Q10.4</b>		
How many slices of hard bread does your child eat?	<input type="text"/>	<input type="text"/>
Never eat 97		
Do not know 98		
10.4a per day		
10.4b per week		

<p><b>11</b> How often does your child eat fruit and vegetables during a day, a week or a month. If your child does not eat fruit and vegetables every day, please think about how often your child eats it in a week or in a month. Think about the last 12 months when you respond.</p> <p><i>Please respond to both sub questions, but only one response (cross, X) on each row</i></p> <p>Do not count small portions, eg. a slice of cucumber on bread, parsley as decoration, berries on cake etc.</p>																	
	<p>11.1a Times per month</p>				<p>11.1b Times per week</p>						<p>11.1c Times per day</p>						
	<1	1	2	3	1	<1	1	2	3	4	1	1	2	3	4	5	6 or more
<p><sup>1</sup> How often does your child eat vegetables, pulses and/or root fruits (includes fresh, frozen, canned, glass/potted etc) <b>DO NOT COUNT POTATOES</b> It is vegetables such as carrots, tomatoes, cucumber, broccoli, peppers, salad, beans, chick peas, lentils, beetroot, celery and parsnip.</p> <p>Try also to include dishes that have vegetables in them, such as mixed salad, mixed vegetables, fried vegetables, vegetable soup and stews.</p>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>		1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
	<p>Dont Know=8 None= 7</p>																

<p><b>11</b> How often does your child eat fruit and vegetables during a day, a week or a month. If your child does not eat fruit and vegetables every day, please think about how often your child eats it in a week or in a month. Think about the last 12 months when you respond.</p> <p><i>Please respond to both sub questions, but only one response (cross, X) on each row</i></p> <p>Do not count small portions, eg. a slice of cucumber on bread, parsley as decoration, berries on cake etc.</p>																
	Times per month				Times per week						Times per day					
	<1	1	2	3	1	2	3	4	5	6	1	2	3	4	5	6 or more
<p>11.2 How often does your child eat fruit and berries (includes fresh, frozen, canned, glassed/potted etc.) . Fruit and berries include: an apple, an orange, a banana, a bunch of grapes, a plate of strawberries or fruit and berries that are part of porridge, fruit stew, or fruit salad etc.</p>	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>
	<p>Dont Know=8 None= 7</p>															

<p><b>12 Now I will ask you how often your child eats and drinks a selection of food. Please consider the past 12 months when you answer these questions.</b></p> <p>Please answer all questions, but only cross one box on each row</p>														
	A Times per month				B Times per week						C Times per day			
	<1*	1	2	3	1	2	3	4	5	6	1	2	3	4 or more
How often does your child eat/drink?	0	1	2	3	1	2	3	4	5	6	1	2	3	4
12.01 French fries, roasted/fried potatoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.02 Fish and shellfish as main course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.03 Sausage as a main course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.04 Chocolate and/or candy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.05 Cake, biscuits, tart etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.06 Full fat cheese (45-60+ or 24-44% fat)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.07 Low fat/sugar-free fizzy drinks, cordial, ice-tea, light or sugar free drinks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.08 Normal fizzy drinks, cordial, ice-tea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.09 Energy drinks, red bull, cult etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.10 Fruit juice or Vegetable Juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Dont Know=8 None= 7													

**The next questions regard physical activity of the child**

[Comment: *The interviewer reads three examples of activity. Additional examples are in italics and if the respondents have difficulties in answering, the interviewer can add some of these additional examples on request. Generally the interviewer does not read the text in italics but can use the text as a reminder or can read it on request.*]

**I am going to ask you about physical activity of your child outside school hours during the last 7 days. Your information is important even if your child has not been physically active.**

[Question 13]

**I am going to ask you about all physical activity during your child's leisure time and active transportation [e.g. transportation to and from school]. Include all activity where the physical effort is moderate or harder that is, you should include both moderate and vigorous activity. This kind of activity accelerates heart rate and breathing. Examples are bicycle riding, football (soccer) or outdoor games. Additional examples are playing handball, skateboarding; these examples can be age and country specific**

**During the last 7 days, how much time in total did your child spend in physical activity where the physical effort was moderate or harder? Estimate to the nearest half hour.**

*The interviewer can help the respondent to narrow down the answer to the nearest half hour. It is important to know if physical activity is less or more than 3½ hours and if it is more or less than 7 hours*

Hours.....  
 Minutes.....  
 DK (Dont Know) 98

[Question 14a (Sedentary time, TV watching)]

**During the last 7 days, how much time per day on average did your child spend sitting and watching TV in his/her leisure time? Estimate it to the nearest half hour. Include videos, DVD and console games (PlayStation, Xbox, etc) played on TV screen.**

*The interviewer can help the respondent to narrow down the answer to the nearest half hour. It is important to know if average time is less or more than 1 hour and if it is more or less than 2½ hours*

Hours.....  
 Minutes.....  
 DK (Dont Know) 98



[Question 14b (Sedentary time; Computer screen time)]

**Interviewer:** During the last 7 days, how much time per day on average did your child spend in front of a computer screen during his/her leisure-time? Estimate to the nearest half an hour. Include video-games, mobile phone games and internet use, and TV programs watched on a computer screen; include home work.

*The interviewer can help the respondent to narrow down the answer to the nearest half hour. It is important to know if average time is less or more than 1 hour and if it is more or less than 2½ hours*

Hours.....  
Minutes.....  
DK (Dont Know)


98

[Question 15 (classification of leisure-time physical activity)]

**Choose one of the following descriptions that best fits your child's leisure time activity during the last 7 days.**

(1) Reading, watching TV or other sedentary activity. ☐ 1

(2) Walking, cycling, or other forms of light exercise that lasted for at least 4 hours during the last 7 days. Include walking or cycling to and from school, active recreation, etc. *[such as skateboarding or rollerblading]* ☐ 2

(3) Participation in recreational sports [such as football or swimming], active games, etc. [such as tag], where the duration of activity lasted for at least 4 hours in total during the last 7 days. ☐ 3

(4) Participation in hard training or sports competitions, regularly several times during the last 7 days. ☐ 4

# Appendix B: Guidelines for processing

## Guidelines for processing data from the Nordic Food Frequency Questionnaire (NFFQ)

Data on diet is processed slightly different compared to previous published results on diet (Rasmussen *et al.* 2012) because missing values are treated differently in this report. Results on “never eat” and “irrelevant” were not both set to missing. The use of weighted data also introduces minor changes regarding data from 2011 compared to previous published results.

*Adults and children:* Data on bread intake > 15 slices/day were judged unrealistic and changed to missing. Frequency intake < 1 time/month was coded as 0.5 time/month, and highest frequency intake  $\geq 4$  or more times/day or  $\geq 6$  or more times/day was coded as 4 or 6 times/day, respectively. The conversion factor between month and day was 30, and between month and week 4.29. Higher values than possible in a category was not judged as unrealistic/missing, but set to highest frequency category.

## Guidelines for processing and categorizing data from the Nordic Physical Activity Questionnaire (NPAQ)

*Adults and children:* Data that were not rounded to the nearest ½ hour by the interviewer were rounded to the nearest ½ hour and hours and minutes were added together before data processing and further calculations were done in hours. Only participants who reported valid data for moderate to vigorous physical activity (MVPA), vigorous physical activity (VPA; adults), and/or TV time and computer time were included in the analyses.

MVPA adults and children: Data on MVPA > 21 hours/week and  $\leq 35$  hours/week were truncated down to 21 hours/week. Data on MVPA > 35 hours/week were judged unrealistic and set to missing.

VPA adults: Data on VPA > 10 hours/week and  $\leq 21$  hours/week were truncated down to 10 hours/week. Data on VPA > 21 hours/week or VPA-hours > MVPA-hours were judged unrealistic and set to missing.

MPA adults: Moderate physical activity (MPA) was calculated by subtracting VPA from MVPA ( $MPA = MVPA - VPA$ ). Calculation of MPA should be done in this step (after rounding to the nearest hour, adding hours and minutes together and truncating down high values) in order to get valid data.

Screen time (TV + computer time) adults and children: Data on screen time (TV + computer time) > 12 hours/day and  $\leq 18$  hours/day were truncated down to 12 hours/day using weighted truncation. Data on screen time (TV + computer time) > 18 hours/day were judged unrealistic and set to missing (TV and computer time).

#### Calculation of activity categories

*Compliance with physical activity (PA) recommendations adults: To determine compliance with the recommendations on physical activity among adults, six different physical activity categories (PAC) were calculated from MPA and VPA. Then a cut-point (cp) ratio was calculated for both MPA and VPA:*

- $MPA_{ratio} = MPA / MPA_{cp}$ .  $MPA_{cp}$  (cut-point for MPA) was set at 3,5 hours/week.
- $VPA_{ratio} = VPA / VPA_{cp}$ .  $VPA_{cp}$  (cut-point for VPA) was set to 1,25 hours/week.

*Six PAC groups were calculated:*

- PAC=0:  $MPA_{ratio} = 0$  and  $VPA_{ratio} = 0$  (highly inactive – not meeting PA recommendations).
- PAC=1:  $MPA_{ratio} + VPA_{ratio} < 1.0$  (inactive – not meeting PA recommendations).
- PAC=2:  $MPA_{ratio} \geq 1.0$  and  $VPA_{ratio} < 1.0$  (active – meeting PA recommendations by moderate intensity PA).
- PAC=3:  $MPA_{ratio} < 1.0$  and  $VPA_{ratio} \geq 1.0$  (active – meeting PA recommendations by vigorous intensity PA).
- PAC=4:  $MPA_{ratio} + VPA_{ratio} \geq 1.0$  (active – meeting PA recommendations by a combination of moderate and vigorous intensity PA).
- PAC=5:  $MPA_{ratio} \geq 1.0$  and  $VPA_{ratio} \geq 1.0$  (highly active – meeting full PA recommendations, i.e. meeting both moderate and vigorous intensity recommendations).

*Compliance with physical activity recommendations children: To determine compliance with the recommendation on physical activity among children, three different physical activity categories were defined as:*

- PAC=0: Highly inactive (not meeting PA recommendation): < 0,25 MVPA hours/week.
- PAC=1: Inactive (not meeting PA recommendation):  $\geq 0,25$  MVPA hours/week and < 7 MVPA hours/week.
- PAC=2: Active (meeting PA recommendation):  $\geq 7,0$  MVPA hours/week.

# Appendix C: Goals 2011 and Visions 2021 in the Nordic Plan of Action

Tabel g6: How to evaluate goals and visions

	Goal 2011	How to evaluate goal 2011?	Vision 2021	How to evaluate vision 2021?
Diet	"The consumption of <i>fruits and vegetables</i> has increased."	Examine the development of fruit and vegetables (excl. fruit juice) intake among adults and children. <i>NORMO 2011–2014</i>	"At least 70% of the population above 10 years has a daily intake of <i>fruits and vegetables</i> of at least 500 g/day."	Examine the population levels of "5+ a day" of fruit and vegetables (incl. fruit juice) among adults and children. <sup>22</sup> <i>NORMO 2011–2014</i>
	"The consumption of <i>fish</i> has increased." <sup>23</sup>	Examine the development of fish intake among adults and children. <i>NORMO 2011–2014</i>	"70% or more consumes <i>fish</i> or fish products, corresponding to a main dish twice a week."	Examine the population levels of fish intake (fish as a main course twice a week) among adults and children. <i>NORMO 2011–2014</i>
	"The consumption of whole-grain bread/cereals has increased."	Examine the development of wholegrain/cereals intake among adults and children. <i>NORMO 2011–2014</i>	"At least 70% of the adult population has a daily intake of whole-grain bread/cereals corresponding to at least half of their daily intake of bread/cereals."	Examine the population levels of whole grain intake (daily bread intake where at least half of all bread eaten is whole grain) among adults and children. <i>NORMO 2011–2014</i>
	"The intake of fat, especially saturated fat and trans fatty acids, has been reduced."	Examine the development of saturated fat intake among adults and children using a fat index <sup>24</sup> based on a high intake of full fat cheese intake, and type of fat used on bread and for cooking). <i>NORMO 2011–2014</i>	"The average dietary intake of the population meets the NNR on saturated fat plus trans fatty acids (less than 10 E% from saturated fat), and at least 70% meets the NNR on fat (E% from fat between 25 and 40)." <sup>25</sup>	Examine the population levels and the development meeting the NNR recommendation on total fat and saturated fat among adults and children using other national estimates from the Nordic countries. Other national estimates from the Nordic countries

<sup>22</sup> Intake of fruit juice is adjusted, so that intake frequencies of juice > 1/day are calculated as 1/day.

<sup>23</sup> Fish is not mentioned in Goal 2011 in the Nordic Plan of Action (Nordic Council of Ministers 2006), but a goal of an increased intake of fish is suggested by the NORMO project group.

<sup>24</sup> High saturated fat index group, i.e. high frequency intake of full fat cheese and a high content of saturated fat used on bread and for cooking.

<sup>25</sup> The upper limit for saturated fat intake has changed from max 10 E% to less than 10 E%. In addition, the upper limit for the total fat intake has changed from 35 E% to 40% and the population goal on 30 E% from fat is in no longer used in the Nordic Nutrition Recommendations (Nordic Nutrition Recommendations 2012).

	Goal 2011	How to evaluate goal 2011?	Vision 2021	How to evaluate vision 2021?
Table 96 continued				
	"The intake of <i>added sugar</i> has been reduced."	Examine the development of added sugar intake among adults and children using a sugar index based on a high intake of chocolate/candy, cake and soft drinks. <sup>26</sup> <i>NORMO 2011–2014</i>	"80% or more meets the NNR recommendation on daily intake of <i>added sugar</i> (max. 10 E%)."	Examine the population levels and the development meeting the NNR recommendation on added sugar among adults and children using other national estimates from the Nordic countries.  <i>Other national estimates from the Nordic countries</i>
Physical activity	"The current trend, where an increasing proportion of adults are <i>physically inactive</i> , <sup>27</sup> has been brought to a halt and at best reversed."	Examine the development of physical activity (inactive) and sedentary behaviour (high recreational screen time) among adults. <sup>28</sup> <i>NORMO 2011–2014</i>	"At least 75% of the adult population is <i>physically active</i> (moderate intensity) for at least 30 minutes every day."	Examine the population levels meeting the physical activity recommendations among adults. <i>NORMO 2011–2014</i>
	"The current trend, where an increasing proportion of children are <i>physically inactive</i> , <sup>3</sup> has been brought to a halt and at best reversed."	Examine the development of physical activity (inactive) and sedentary behaviour (high recreational screen time). <i>NORMO 2011–2014</i>	"All children aged 5–12 are <i>physically active</i> (moderate intensity) for at least 1 hour every day." <sup>29</sup>	Examine the population levels meeting the physical activity recommendations among children. <i>NORMO 2011–2014</i>
Overweight/obesity	"The continuing increase in the proportion of the <i>overweight and obese adults</i> has been stopped and at best reversed."	Examine the development of overweight and obesity among adults. <i>NORMO 2011–2014</i>	"The number of <i>overweight and obese adults</i> has been reduced by at least 30% from the present level." <sup>30</sup>	Examine the prevalence and the development of overweight and obesity among adults using NORMO data and other national estimates from the Nordic countries. <i>NORMO 2014 and other national estimates from the Nordic countries</i>

<sup>26</sup> High sugar index group, i.e. high frequency intake of sugar-rich foods (chocolate/candy, cake and soft drinks).

<sup>27</sup> Physically inactive is insufficient active and is defined as a failure to meet the physical activity recommendations (Nordic Nutrition Recommendations 2012)

<sup>28</sup> High recreational screen time (> 4 hours/day of TV and computer time) was used as an indicator of sedentary behaviour.

<sup>29</sup> The physical activity recommendations stating that children and young people should accumulate at least one hour of moderate to vigorous intensity physical activity daily is targeted to 5–17-y-olds (WHO 2010).

<sup>30</sup> The present level refers to year 2006 where the Nordic Plan of Action was launched.

	Goal 2011	How to evaluate goal 2011?	Vision 2021	How to evaluate vision 2021?
Table 96 continued				
	<p>"The continuing increase in the proportion of the <i>overweight and obese children</i></p> <p>has been stopped and at best reversed."</p>	<p>Examine the development of overweight and obesity among children.</p> <p><i>NORMO 2011–2014</i></p>	<p>"The number of <i>overweight and obese children</i> has been reduced by at least 50% from the present level."<sup>34</sup></p>	<p>Examine the prevalence and the development of overweight and obesity among children using NORMO data and other national estimates from the Nordic countries.</p> <p><i>NORMO 2014 and other national estimates from the Nordic countries</i></p>
Social inequality in overweight/obesity and diet and physical activity	<p>"Existing differences between <i>different social groups</i> with regard to overweight, obesity, unhealthy diet, and physical inactivity have not deepened further and at best have been reduced."</p>	<p>Examine the development of diet (unhealthy diet), physical activity (inactive), sedentary behavior (high recreational screen time), and overweight and obesity among adults and children in the low and high education group.<sup>31</sup></p> <p><i>NORMO 2011–2014</i></p>	<p>"The difference between <i>different social groups</i> on meeting the defined objectives with regard to diet, physical activity, and overweight/obesity has decreased and is at most 20% between groups."</p>	<p>Examine the population levels and the development of diet (unhealthy diet), physical activity (inactive) and overweight among adults and children in the low and high education group. Examine if the relative difference between the low and high education group exceeds 20% in 2014.</p> <p><i>NORMO 2011–2014</i></p>

## References

- Nordic Nutrition Recommendations 2012. Integrating nutrition and physical activity. 5th ed. Copenhagen: Nordic Council of Ministers; 2014.
- Nordic Council of Ministers. Health, food and physical activity. Nordic Plan of Action on better health and quality of life through diet and physical activity, Copenhagen 2006.
- WHO. Global recommendations on physical activity for health. World Health Organization 2010.

<sup>31</sup> Low education is defined as basic education (< 10 y), and high education is defined as low, medium or long higher education (≥ 13 y). Medium education is defined as vocational or upper secondary education (10–12 y).



## **Appendix D: Additional tables**



## Foods

Table 97: Mean (95% CI) intake of selected foods among *adults* in the Nordic countries. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=1,943)	2014 (n=1,969)	2011 (n=1,966)	2014 (n=1,561)	2011 (n=1,834)	2014 (n=1,700)	2011 (n=1,946)	2014 (n=1,916)	2011 (n=1,035)	2014 (n=961)	2011 (n=8,833)	2014 (n=8,144)
<i>Rye bread (slices/day)</i>	2.4 (2.3;2.4)	1.8*** (1.8;1.9)	2.6 (2.5;2.7)	2.3*** (2.2;2.4)	—	—	0.7 (0.7;0.8)	0.7 (0.7;0.7)	0.9 (0.8;1.1)	0.8 <sup>+</sup> (0.7;0.9)	1.3 (1.2;1.3)	1.1*** (1.0;1.1)
<i>Wholemeal bread (slices/day)</i>	1.1 (1.1;1.2)	1.1 (1.1;1.2)	1.1 (1.1;1.2)	1.0* (0.9;1.1)	1.6 (1.6;1.7)	1.4*** (1.3;1.5)	1.0 (1.0;1.1)	0.7*** (0.7;0.8)	3.0 (2.8;3.2)	2.5*** (2.4;2.7)	1.7 (1.6;1.7)	1.5*** (1.4;1.5)
<i>White bread (slices/day)</i>	0.6 (0.5;0.6)	0.5* (0.4;0.5)	0.4 (0.4;0.5)	0.5 (0.4;0.5)	0.5 (0.5;0.6)	0.5 (0.5;0.6)	0.1 (0.1;0.1)	0.2*** (0.2;0.2)	0.2 (0.2;0.3)	0.3 (0.2;0.3)	0.4 (0.4;0.5)	0.4 (0.4;0.5)
<i>Hard bread (slices/day)</i>	0.3 (0.3;0.4)	0.3 (0.3;0.4)	0.5 (0.4;0.5)	0.4 (0.4;0.5)	1.0 (1.0;1.1)	1.0 (0.9;1.0)	0.7 (0.6;0.7)	0.8* (0.7;0.8)	1.1 (1.0;1.2)	1.2 (1.1;1.3)	0.8 (0.7;0.8)	0.8 (0.7;0.8)
<i>Vegetables (freq./day)</i>	1.1 (1.1;1.1)	1.2*** (1.2;1.2)	1.3 (1.2;1.3)	1.4*** (1.3;1.4)	1.3 (1.2;1.3)	1.5*** (1.5;1.5)	1.1 (1.0;1.1)	1.1 (1.0;1.1)	1.7 (1.6;1.7)	1.2*** (1.1;1.2)	1.3 (1.3;1.3)	1.3* (1.3;1.4)
<i>Fruit<sup>‡</sup> (freq./day)</i>	1.5 (1.4;1.5)	1.4** (1.3;1.4)	1.1 (1.0;1.1)	1.2** (1.1;1.2)	1.3 (1.2;1.3)	1.2** (1.1;1.2)	1.1 (1.0;1.1)	1.1 (1.0;1.1)	1.2 (1.1;1.3)	1.1* (1.1;1.2)	1.2 (1.2;1.3)	1.2*** (1.2;1.2)
<i>Fruit juice (freq./day)</i>	0.3 (0.3;0.3)	0.3*** (0.2;0.3)	0.4 (0.4;0.4)	0.3*** (0.3;0.4)	0.4 (0.3;0.4)	0.3** (0.3;0.3)	0.5 (0.5;0.5)	0.4*** (0.3;0.4)	0.5 (0.5;0.6)	0.4*** (0.4;0.4)	0.4 (0.4;0.4)	0.3*** (0.3;0.3)
<i>Fish (freq./week)</i>	1.3 (1.2;1.3)	1.1* (1.1;1.2)	1.3 (1.3;1.4)	1.4 (1.3;1.5)	1.4 (1.4;1.5)	1.5 (1.4;1.5)	2.0 (1.9;2.0)	2.0 (1.9;2.1)	2.2 (2.0;2.3)	1.8*** (1.7;1.9)	1.5 (1.5;1.6)	1.5** (1.4;1.5)
<i>French fries (freq./month)</i>	3.2 (2.9;3.5)	3.2 (3.0;3.4)	2.0 (1.9;2.2)	2.1 (2.0;2.3)	2.9 (2.7;3.1)	3.1 (2.9;3.3)	3.1 (2.9;3.3)	3.2 (3.0;3.4)	2.0 (1.8;2.2)	2.5** (2.2;2.9)	2.6 (2.5;2.7)	2.8** (2.7;2.9)
<i>Sausage (freq./month)</i>	1.2 (1.0;1.4)	1.4 (1.2;1.6)	2.5 (2.3;2.7)	2.3 (2.1;2.5)	3.8 (3.6;4.0)	3.5** (3.3;3.6)	2.4 (2.3;2.6)	2.0*** (1.9;2.1)	2.1 (1.9;2.3)	2.6* (2.2;3.0)	2.6 (2.5;2.7)	2.6 (2.5;2.7)
<i>Chocolate and candy (freq./month)</i>	12.0 (11.4;12.6)	12.7 (11.9;13.4)	8.9 (8.3;9.4)	8.7 (8.2;9.3)	8.6 (8.1;9.1)	8.3 (7.8;8.8)	12.0 (11.5;12.5)	12.7 <sup>+</sup> (12.1;13.2)	10.6 (9.7;11.5)	10.0 (9.1;10.8)	9.8 (9.5;10.1)	9.7 (9.4;10.0)
<i>Cake (freq./month)</i>	7.3 (6.9;7.7)	6.4** (6.0;6.7)	9.9 (9.4;10.5)	9.0* (8.5;9.7)	7.4 (6.8;7.9)	6.2** (5.8;6.6)	9.4 (8.9;9.9)	8.1*** (7.7;8.5)	5.1 (4.5;5.6)	5.1 (4.3;5.9)	7.5 (7.2;7.7)	6.6*** (6.4;6.9)

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=1,943)	2014 (n=1,969)	2011 (n=1,966)	2014 (n=1,561)	2011 (n=1,834)	2014 (n=1,700)	2011 (n=1,946)	2014 (n=1,916)	2011 (n=1,035)	2014 (n=961)	2011 (n=8,833)	2014 (n=8,144)
<i>Cheese (freq./day)</i>	0.6 (0.5;0.6)	0.5*** (0.5;0.5)	0.6 (0.5;0.6)	0.6 (0.5;0.6)	0.7 (0.7;0.7)	0.7* (0.7;0.8)	0.5 (0.5;0.5)	0.6** (0.5;0.6)	0.9 (0.8;0.9)	0.9 (0.8;0.9)	0.7 (0.6;0.7)	0.7 (0.7;0.7)
<i>Sugar free beverage (freq./week)</i>	2.6 (2.3;2.8)	2.6 (2.4;2.8)	2.8 (2.6;3.1)	1.8*** (1.6;2.0)	0.9 (0.8;1.0)	1.0 (0.8;1.1)	1.6 (1.4;1.8)	1.7 (1.6;1.9)	2.8 (2.4;3.1)	2.4 <sup>-</sup> (2.1;2.7)	2.0 (1.9;2.1)	1.8*** (1.7;1.9)
<i>Soft drinks, sugar sweetened (freq./week)</i>	1.9 (1.7;2.0)	1.8 (1.6;1.9)	1.6 (1.5;1.8)	1.3** (1.2;1.4)	1.1 (1.0;1.3)	1.6*** (1.4;1.7)	2.2 (2.0;2.4)	2.0 (1.8;2.2)	1.7 (1.5;2.0)	1.8 (1.6;2.1)	1.5 (1.5;1.6)	1.6 (1.5;1.7)
<i>Energy drinks (freq./week)</i>	0.7 (0.5;0.9)	1.3** (1.0;1.6)	0.8 (0.6;1.1)	0.7 (0.6;0.9)	0.9 (0.7;1.0)	1.9*** (1.4;2.3)	1.0 (0.8;1.1)	1.0 (0.8;1.2)	0.9 (0.7;1.2)	1.4 <sup>-</sup> (1.0;1.7)	0.8 (0.7;0.9)	1.4*** (1.2;1.6)

Note: <sup>-</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

£Excluding fruit juice.

@Weighted according to population size in the five Nordic countries.

**Table g8: Mean (95% CI) intake of selected foods among *children* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>a</sup>	
	2011 (n= 608)	2014 (n=592)	2011 (n=496)	2014 (n=467)	2011 (n=492)	2014 (n=481)	2011 (n=508)	2014 (n=493)	2011 (n=349)	2014 (n=338)	2011 (n=2,459)	2014 (n=2,377)
Rye bread (slices/day)	2.1 (2.0;2.2)	1.8*** (1.7;1.9)	1.9 (1.7;2.0)	1.8 (1.7;2.0)	–	–	0.4 (0.4;0.5)	0.5 (0.4;0.5)	0.5 (0.3;0.6)	0.9*** (0.7;1.1)	1.0 (0.9;1.0)	1.0 (0.9;1.0)
Wholemeal bread (slices/day)	1.2 (1.1;1.3)	1.5*** (1.3;1.6)	1.4 (1.3;1.6)	1.2** (1.0;1.3)	1.1 (1.0;1.3)	1.3* (1.2;1.4)	1.5 (1.4;1.6)	1.2*** (1.1;1.3)	3.7 (3.5;3.9)	2.9*** (2.6;3.1)	1.8 (1.7;1.8)	1.6** (1.6;1.7)
White bread (slices/day)	0.6 (0.5;0.7)	0.5* (0.4;0.6)	0.6 (0.5;0.6)	0.7 <sup>~</sup> (0.6;0.8)	0.8 (0.7;0.9)	1.0* (0.9;1.1)	0.1 (0.1;0.1)	0.1 (0.1;0.1)	0.4 (0.3;0.5)	0.5 (0.4;0.6)	0.6 (0.6;0.7)	0.7** (0.7;0.7)
Hard bread (slices/day)	0.3 (0.3;0.4)	0.3 (0.3;0.3)	0.6 (0.6;0.7)	0.7 (0.7;0.8)	0.7 (0.6;0.8)	0.6 (0.6;0.7)	0.3 (0.3;0.4)	0.3 (0.2;0.3)	0.6 (0.5;0.7)	0.6 (0.5;0.7)	0.6 (0.5;0.6)	0.5 (0.5;0.6)
Vegetables (freq./day)	1.4 (1.3;1.5)	1.5* (1.5;1.6)	1.4 (1.4;1.5)	1.6* (1.5;1.7)	1.4 (1.3;1.5)	1.5** (1.5;1.6)	1.2 (1.2;1.3)	1.2 (1.1;1.2)	1.3 (1.2;1.4)	1.1** (1.1;1.2)	1.4 (1.4;1.4)	1.5** (1.4;1.5)
Fruit <sup>c</sup> (freq./day)	1.7 (1.6;1.8)	1.6 <sup>~</sup> (1.5;1.7)	1.2 (1.1;1.2)	1.2 (1.1;1.3)	1.4 (1.4;1.5)	1.5 (1.4;1.6)	1.4 (1.3;1.5)	1.4 (1.4;1.5)	1.2 (1.1;1.3)	1.3* (1.3;1.4)	1.4 (1.3;1.4)	1.4 (1.4;1.5)
Fruit juice (freq./day)	0.3 (0.3;0.3)	0.3 (0.2;0.3)	0.4 (0.3;0.4)	0.3 (0.3;0.4)	0.4 (0.3;0.4)	0.4 (0.3;0.4)	0.6 (0.5;0.6)	0.5*** (0.4;0.5)	0.6 (0.5;0.6)	0.5 (0.5;0.6)	0.4 (0.4;0.4)	0.4** (0.3;0.4)
Fish (freq./week)	0.8 (0.7;0.9)	1.0* (0.8;1.1)	1.3 (1.2;1.4)	1.5* (1.4;1.5)	1.4 (1.3;1.5)	1.5 <sup>~</sup> (1.4;1.6)	2.4 (2.3;2.4)	2.6* (2.4;2.8)	1.7 (1.4;1.9)	1.8 (1.6;1.9)	1.3 (1.3;1.4)	1.4*** (1.4;1.5)
French fries (freq./month)	3.5 (3.1;3.8)	3.5 (3.1;3.8)	2.5 (2.2;2.8)	2.4 (2.2;2.6)	2.5 (2.3;2.7)	3.3*** (3.1;3.6)	2.4 (2.2;2.7)	2.6 (2.4;2.9)	2.6 (2.3;2.9)	2.7 (2.2;3.2)	2.7 (2.6;2.9)	3.0** (2.9;3.2)
Sausage (freq./month)	1.5 (1.3;1.7)	1.4 (1.2;1.6)	3.4 (3.2;3.7)	3.2 (3.0;3.40)	5.4 (5.0;5.8)	4.9 <sup>~</sup> (4.7;5.2)	2.9 (2.7;3.1)	2.8 (2.3;3.4)	3.9 (3.5;4.3)	2.8*** (2.5;3.2)	3.7 (3.6;3.9)	3.3 (3.2;3.5)
Chocolate and candy (freq./month)	9.2 (8.5;10.0)	8.5 (8.0;9.0)	8.7 (8.0;9.3)	7.3** (6.8;7.8)	5.9 (5.5;6.2)	6.0 (5.6;6.3)	6.6 (6.2;7.0)	7.4* (6.9;7.8)	7.4 (6.6;8.2)	7.6 (6.9;8.3)	7.5 (7.3;7.8)	7.1* (6.9;7.4)
Cake (freq./month)	7.8 (7.2;8.3)	7.5 (6.9;8.1)	8.5 (7.8;9.2)	7.8 (7.2;8.4)	6.9 (6.3;7.5)	7.5 (6.6;8.4)	11.6 (10.7;12.5)	11.3 (10.4;12.1)	5.1 (4.7;5.6)	4.7 (4.2;5.1)	7.1 (6.8;7.4)	7.0 (6.7;7.3)

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n= 608)	2014 (n=592)	2011 (n=496)	2014 (n=467)	2011 (n=492)	2014 (n=481)	2011 (n=508)	2014 (n=493)	2011 (n=349)	2014 (n=338)	2011 (n=2,459)	2014 (n=2,377)
<b>Table g8 continued</b>												
Cheese (freq./day)	0.3 (0.3;0.3)	0.2** (0.2;0.3)	0.7 (0.6;0.7)	0.5* (0.5;0.6)	0.6 (0.5;0.6)	0.5 (0.5;0.6)	0.5 (0.5;0.6)	0.5 (0.4;0.5)	0.7 (0.6;0.7)	0.7 (0.7;0.8)	0.5 (0.5;0.6)	0.5* (0.5;0.5)
Sugar free beverage (freq./week)	1.8 (1.5;2.0)	1.5 (1.3;1.8)	1.7 (1.3;2.0)	1.0** (0.8;1.2)	0.6 (0.4;0.7)	0.5 (0.4;0.7)	1.4 (1.2;1.7)	0.9*** (0.7;1.0)	2.3 (1.9;2.7)	1.7* (1.4;2.0)	1.4 (1.3;1.6)	1.1*** (1.0;1.2)
Soft drinks, sugar sweetened (freq./week)	1.7 (1.4;1.9)	1.5 (1.3;1.7)	2.3 (2.0;2.6)	2.2 (1.9;2.4)	1.5 (1.3;1.6)	1.5 (1.3;1.7)	1.4 (1.3;1.6)	1.1*** (1.0;1.2)	1.5 (1.3;1.8)	1.3 (1.2;1.5)	1.7 (1.6;1.8)	1.6 (1.5;1.7)

Note: <sup>~</sup>p<0.10, \*p<0.05, \*\*p<0.01, \*\*\*p<0.001: Differences between survey years 2011 and 2014 using t-tests and Chi-square tests.

<sup>f</sup>Excluding fruit juice.

<sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table g9: Proportion of adults using the different types of spread, 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region	
	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %
Butter	15.3	16.0	9.2	7.2	4.6	3.8	11.4	25.7	9.0	11.9	8.9	9.0
Oil-butter spreads	38.0	41.6	35.6	42.1	39.4	52.8	47.7	45.8	29.8	30.9	36.5	43.7
Margarine	2.6	2.4	12.2	17.1	16.0	13.0	5.4	2.8	7.5	6.5	10.5	10.2
Low fat margarine	4.2	2.4	16.9	13.0	25.5	17.8	21.3	9.7	24.1	22.3	18.7	14.4
"Becel Pro-Activ"	2.2	1.5	17.8	13.1	3.2	2.1	0.3	0.3	2.5	3.6	5.9	4.5
Do not use spread on bread	37.7	36.1	8.3	7.4	11.2	10.5	13.9	15.7	27.2	24.8	19.6	18.2

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 100: Proportion of adults using the different types of spread/grease for cooking, 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region	
	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %
Butter	3.6	4.2	18.6	15.6	22.6	22.4	4.4	10.0	8.6	10.0	14.7	14.5
Oil–butter spreads	2.1	1.9	8.3	9.6	0.9	1.7	0.7	0.8	2.8	3.4	3.1	3.7
Margarine	15.7	10.4	5.5	3.6	13.1	9.1	8.8	5.8	22.7	21.1	13.9	10.6
Use of mixture of oil and butter	25.5	30.1	8.9	9.3	32.4	34.6	2.2	6.7	13.3	14.3	21.9	24.1
Oil	53.1	53.4	58.7	61.9	31.0	32.2	83.9	76.7	52.7	51.1	46.5	47.2

Note: @Weighted according to population size in the five Nordic countries.

**Table 101: Proportion of children using the different types of spread, 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region	
	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %
Butter	12.4	12.1	5.4	3.7	1.7	1.9	7.2	17.2	6.5	7.0	6.0	5.8
Oil–butter spreads	50.5	60.9	42.6	45.7	49.4	52.5	50.4	53.9	28.9	37.7	44.0	50.0
Margarine	3.6	1.8	20.3	27.3	16.6	20.3	7.1	3.4	7.6	3.1	12.3	13.8
Low fat margarine	7.4	3.9	10.7	17.6	25.4	20.1	21.4	12.1	28.5	24.7	18.9	16.8
"Becel Pro–Activ"	1.9	1.6	19.0	4.7	1.3	0.6	2.3	.	2.7	2.3	5.3	2.0
Do not use spread on bread	24.2	19.7	1.5	1.0	5.3	4.6	11.6	13.4	24.0	25.1	12.9	11.6

Note: @Weighted according to population size in the five Nordic countries.

**Table 102: Proportion of children using the different types of spread/grease for cooking, 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region	
	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %	2011 %	2014 %
Butter	3.6	4.3	18.6	14.9	23.6	25.4	.	7.8	6.4	5.9	14.0	14.4
Oil–butter spreads	2.4	0.5	9.5	7.8	0.6	0.1	1.3	1.8	3.0	5.7	3.3	2.9
Margarine	12.8	7.3	5.5	5.5	18.4	8.0	6.4	4.2	28.6	17.0	16.6	9.2
Use of mixture of oil and butter	25.6	25.8	9.1	7.6	27.8	35.4	2.9	12.4	10.9	8.7	19.7	22.0
Oil	55.8	62.0	57.3	64.3	29.6	31.1	89.4	73.8	51.0	62.7	46.5	51.5

Note: @Weighted according to population size in the five Nordic countries.

## Physical activity

### Adults

**Table 103: Level of occupational physical activity during the last 7 days among *adults* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=1,789)	2014 (n=1,688)	2011 (n=1,481)	2014 (n=1,262)	2011 (n=1,627)	2014 (n=1,528)	2011 (n=1,799)	2014 (n=1,809)	2011 (n=915)	2014 (n=931)	2011 (n=7,611)	2014 (n=7,218)
Sedentary	39.3	36.9	44.4	40.8	44.6	42.5	46.9	39.8	47.2	38.9	44.0	40.2
Light activity	31.8	25.2	22.8	22.9	24.6	27.6	26.0	27.0	21.7	21.3	25.2	24.9
Moderate activity	21.3	30.9	22.4	24.3	22.5	23.2	18.2	23.0	19.2	26.1	21.6	25.6
Heavy activity	7.5	7.0	10.4	12.0	8.3	6.7	8.9	10.2	11.9	13.6	9.2	9.3

Note: ®Weighted according to population size in the five Nordic countries.

**Table 104: Level of leisure time physical activity during the last 7 days (%) among *adults* in the Nordic countries. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=2,178)	2014 (n=2,004)	2011 (n=1,987)	2014 (n=1,700)	2011 (n=1,862)	2014 (n=1,776)	2011 (n=1,942)	2014 (n=1,969)	2011 (n=1,045)	2014 (n=1,045)	2011 (n=9,014)	2014 (n=8,494)
Sedentary	30.7	29.5	28.2	27.0	41.4	42.8	51.6	49.5	37.6	34.7	35.6	35.1
Light activity	48.1	41.5	40.6	44.6	40.5	36.3	29.7	29.9	41.3	37.4	42.2	39.3
Moderate activity	16.0	22.5	25.6	21.9	12.1	11.4	11.8	12.5	11.0	16.3	15.6	17.0
Vigorous activity	5.2	6.4	5.7	6.5	6.0	9.5	6.9	8.1	10.1	11.6	6.6	8.6

Note: ®Weighted according to population size in the five Nordic countries.

## Smokeless tobacco (snuff)

Table 105: Proportion of snuff users (%) among adults in the Nordic countries. NORMO 2014

	Denmark <sup>#</sup>	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014	2014 (n=1,709)	2014 (n=1,798)	2014 (n=2,004)	2014 (n=1,057)	2014 (n=6,568)
Total	–	4.1	17.4	7.9	19.6	14.3
Daily	–	2.1	14.8	5.7	16.9	11.8

Note:       <sup>#</sup>Questions on smokeless tobacco (snuff) were not included in Denmark because use of smokeless tobacco has not been very prevalent in Denmark so far.  
               <sup>@</sup>Weighted according to population size in the five Nordic countries.

## Household composition

### Adults

Table 106: Proportion with an unhealthy diet (%) among adults in the Nordic countries according to *household composition*. NORMO 2011 and 2014

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=1,943)	2014 (n=1,985)	2011 (n=1,966)	2014 (n=1,561)	2011 (n=1,860)	2014 (n=1,732)	2011 (n=2,006)	2014 (n=1,962)	2011 (n=1,058)	2014 (n=961)	2011 (n=8,833)	2014 (n=8,201)
Single	21.5	26.8	18.3	15.2	22.6	30.2	25.5	22.2	8.2	17.0	18.6	23.6
Adult(s) living with children	22.8	23.1	15.7	18.9	23.8	29.9	18.7	25.5	9.4	13.3	18.9	22.9
Adult(s) living with other adults	20.2	21.2	14.7	13.0	22.3	24.4	17.5	23.6	8.5	14.3	17.4	19.5

Note:       <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 107: Proportion of inactive (%) among *adults* in the Nordic countries according to *household composition*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=2,093)	2014 (n=1,900)	2011 (n=1,817)	2014 (n=1,637)	2011 (n=1,772)	2014 (n=1,632)	2011 (n=1,864)	2014 (n=1,916)	2011 (n=1,011)	2014 (n=945)	2011 (n=8,557)	2014 (n=8,030)
Single	39.3	38.1	27.2	27.9	28.0	31.1	40.5	37.0	44.5	50.0	33.5	35.0
Adult(s) living with children	38.3	35.2	30.8	32.2	34.5	28.9	33.1	35.2	45.2	45.8	36.7	34.4
Adult(s) living with other adults	30.4	32.4	26.8	27.5	29.2	29.6	33.8	34.6	36.1	42.5	30.3	32.3

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 108: Proportion with high recreational screen time (> 4h/d) (%) among *adults* in the Nordic countries according to *household composition*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=2,158)	2014 (n=1,848)	2011 (n=1,935)	2014 (n=1,579)	2011 (n=1,845)	2014 (n=1,769)	2011 (n=1,905)	2014 (n=1,889)	2011 (n=1,030)	2014 (n=1,007)	2011 (n=8,873)	2014 (n=8,092)
Single	38.7	41.0	30.7	40.9	31.0	31.6	27.8	32.6	43.0	41.9	34.7	37.2
Adult(s) living with children	24.9	25.7	26.8	30.1	20.5	17.9	17.7	22.9	30.1	21.6	24.4	22.7
Adult(s) living with other adults	30.0	37.0	25.7	36.3	26.8	28.0	28.1	29.7	39.8	35.3	29.7	33.1

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 109: Prevalence of OW/OB (%) among *adults* in the Nordic countries according to *household composition*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=2,158)	2014 (n=1,975)	2011 (n=1,980)	2014 (n=1,696)	2011 (n=1,837)	2014 (n=1,761)	2011 (n=1,942)	2014 (n=1,939)	2011 (n=1,033)	2014 (n=1,015)	2011 (n=8,950)	2014 (n=8,386)
Single	47.0	49.8	50.0	49.6	50.7	40.3	52.5	66.9	52.6	53.0	50.1	46.8
Adult(s) living with children	45.5	47.9	44.8	50.4	42.2	47.3	59.2	60.3	49.8	53.3	45.2	49.5
Adult(s) living with other adults	46.9	46.2	49.5	45.7	46.4	44.6	53.3	56.0	41.4	40.4	46.4	44.5

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.



**Table 110: Prevalence of OB (%) among *adults* in the Nordic countries according to *household composition*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=2,158)	2014 (n=1,975)	2011 (n=1,980)	2014 (n=1,696)	2011 (n=1,837)	2014 (n=1,761)	2011 (n=1,942)	2014 (n=1,939)	2011 (n=1,033)	2014 (n=1,015)	2011 (n=8,950)	2014 (n=8,386)
Single	12.0	16.4	16.6	16.5	15.4	10.6	20.5	28.9	9.6	12.8	14.0	13.6
Adult(s) living with children	13.7	15.3	9.1	12.8	10.0	10.6	17.9	22.6	10.8	13.7	10.9	12.9
Adult(s) living with other adults	12.5	14.0	12.6	13.8	10.0	9.3	16.3	15.7	7.4	13.3	10.8	12.2

Note: ®Weighted according to population size in the five Nordic countries.

**Table 111: Proportion of smokers (%) among *adults* in the Nordic countries according to *household composition*. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region®
	2014 (n=2,006)	2014 (n=1,712)	2014 (n=1,798)	2014 (n=2,006)	2014 (n=1,057)	2014 (n=8,579)
Single	34.2	28.3	21.4	32.8	22.9	25.5
Adult(s) living with children	20.0	23.6	11.9	18.1	23.3	18.3
Adult(s) living with other adults	26.6	23.3	15.5	25.1	20.9	20.9

Note: ®Weighted according to population size in the five Nordic countries.

**Table 112: Proportion of daily smokers (%) among *adults* in the Nordic countries according to *household composition*. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region®
	2014 (n=2,006)	2014 (n=1,712)	2014 (n=1,798)	2014 (n=2,006)	2014 (n=1,057)	2014 (n=8,579)
Single	28.1	20.8	10.7	24.5	17.4	17.4
Adult(s) living with children	17.6	18.3	8.9	12.7	17.4	14.4
Adult(s) living with other adults	22.1	16.1	9.3	16.2	10.3	14.0

Note: ®Weighted according to population size in the five Nordic countries.

**Table 113: Mean total alcohol consumption (freq./week) among *adults* in the Nordic countries according to *household composition*. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=2,007)	2014 (n=1,711)	2014 (n=1,799)	2014 (n=2,004)	2014 (n=1,056)	2014 (n=8,577)
Single	2.9	1.6	1.5	1.2	1.4	1.7
Adult(s) living with children	2.0	1.4	1.4	1.1	1.3	1.5
Adult(s) living with other adults	2.7	1.6	1.5	1.3	1.9	1.9

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 114: Proportion of binge drinkers last month (%) among *adults* in the Nordic countries according to *household composition*. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=2,007)	2014 (n=1,666)	2014 (n=1,650)	2014 (n=1,980)	2014 (n=1,025)	2014 (n=8,328)
Single	50.1	58.5	51.3	34.8	44.4	51.3
Adult(s) living with children	44.1	36.7	31.8	39.4	50.5	39.5
Adult(s) living with other adults	46.9	43.7	44.2	40.2	55.2	46.9

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

## Urbanisation

The urbanisation categories are different for Iceland than for the other Nordic countries. The five categories for Iceland are as follows in Tables 115–127:

- The capital and suburb (Reykjavík, Kópavogur, Hafnarfjörður, Garðabær, Seltjarnarnes, Álftanes, Mosfellsbær)
- Urban 5,000 or more
- Urban 1,000–4,999
- Urban 200–999
- Country side.

## Adults

**Table 115: Proportion with an unhealthy diet (%) among *adults* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=1,935)	2014 (n=1,970)	2011 (n=1,952)	2014 (n=1,547)	2011 (n=1,845)	2014 (n=1,712)	2011 (n=2,003)	2014 (n=1,957)	2011 (n=1,051)	2014 (n=948)	2011 (n=8,786)	2014 (n=8,134)
The Capital and suburb	21.7	22.2	10.5	12.7	22.2	27.3	20.3	25.6	7.9	13.3	16.7	20.6
Large city > 50,000 inhab.	17.3	19.0	14.3	14.3	21.9	28.0	18.9	22.7	6.5	12.7	17.0	20.9
City 20,000–49,999 inhab.	19.8	22.6	15.5	12.7	23.7	31.0	14.9	22.5	14.9	15.0	19.3	22.4
Town 1,000–19,999 inhab.	20.6	24.5	17.1	17.0	24.1	27.8	11.2	28.3	9.2	14.4	18.0	20.5
Country side	29.1	23.6	20.9	20.0	23.4	23.8	22.4	18.8	6.6	12.9	20.2	21.3

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 116: Proportion of inactive (%) among *adults* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=2,083)	2014 (n=1,884)	2011 (n=1,804)	2014 (n=1,622)	2011 (n=1,756)	2014 (n=1,614)	2011 (n=1,861)	2014 (n=1,911)	2011 (n=1,004)	2014 (n=931)	2011 (n=8,508)	2014 (n=7,962)
The Capital and suburb	29.4	34.4	29.4	24.9	28.0	26.4	31.9	33.4	36.1	46.7	30.2	31.3
Large city > 50,000 inhab.	30.9	32.1	25.6	27.3	28.2	27.4	39.1	33.0	38.7	40.2	29.6	30.3
City 20,000–49,999 inhab.	31.2	38.1	29.2	34.9	28.3	29.8	37.2	40.6	28.3	48.1	29.3	36.5
Town 1,000–19,999 inhab.	36.5	32.7	29.7	29.2	33.0	32.7	35.5	42.9	47.9	39.7	37.7	33.9
Country side	43.1	31.8	28.4	31.3	38.0	31.6	41.8	38.5	48.9	57.0	38.5	37.0

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 117: Proportion with high recreational screen time (> 4h/d) (%) among *adults* in the Nordic countries according to *urbanization*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=2,148)	2014 (n=1,832)	2011 (n=1,920)	2014 (n=1,565)	2011 (n=1,828)	2014 (n=1,748)	2011 (n=1,902)	2014 (n=1,884)	2011 (n=1,023)	2014 (n=994)	2011 (n=8,821)	2014 (n=8,023)
The Capital and suburb	39.9	33.2	28.5	39.6	25.0	27.5	23.8	28.6	35.6	38.7	30.4	33.3
Large city > 50,000 inhab.	22.6	40.3	27.5	36.7	27.3	27.1	18.6	23.8	38.3	26.0	28.3	31.3
City 20,000–49,999 inhab.	32.2	35.4	28.3	38.4	28.3	27.2	19.8	19.5	46.5	30.2	32.5	31.8
Town 1,000–19,999 inhab.	29.1	30.4	27.8	35.3	23.7	26.3	22.1	31.7	37.7	27.1	29.7	29.0
Country side	24.8	22.2	23.4	25.5	19.6	18.1	15.7	14.4	24.7	34.1	22.3	23.8

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 118: Prevalence of OW/OB (%) among *adults* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=2,148)	2014 (n=1,959)	2011 (n=1,966)	2014 (n=1,680)	2011 (n=1,820)	2014 (n=1,741)	2011 (n=1,939)	2014 (n=1,934)	2011 (n=1,026)	2014 (n=999)	2011 (n=8,899)	2014 (n=8,313)
The Capital and suburb	32.6	38.7	41.7	42.0	39.2	44.2	51.8	54.7	35.7	39.3	38.6	42.1
Large city > 50,000 inhab.	46.1	42.4	46.7	45.4	42.0	39.0	63.8	68.4	41.8	40.8	43.9	41.6
City 20,000–49,999 inhab.	45.3	47.2	46.3	52.2	46.8	50.4	68.6	64.8	51.6	52.2	47.3	50.4
Town 1,000–19,999 inhab.	48.6	51.6	46.9	54.5	44.9	40.3	68.6	70.7	43.7	54.0	46.2	49.6
Country side	58.6	58.3	57.6	50.0	54.2	52.5	59.4	67.0	60.1	51.3	56.9	52.1

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 119: Prevalence of OB (%) among *adults* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region®	
	2011 (n=2,148)	2014 (n=1,959)	2011 (n=1,966)	2014 (n=1,680)	2011 (n=1,820)	2014 (n=1,741)	2011 (n=1,939)	2014 (n=1,934)	2011 (n=1,026)	2014 (n=999)	2011 (n=8,899)	2014 (n=8,313)
The Capital and suburb	7.9	10.3	11.7	14.3	9.5	5.7	14.5	17.2	4.0	10.4	9.1	10.0
Large city > 50,000 inhab.	10.3	14.1	11.2	10.7	7.5	8.3	18.1	27.6	9.2	14.1	9.1	10.9
City 20,000–49,999 inhab.	11.6	15.7	10.0	16.1	10.7	11.4	26.1	27.1	12.5	16.6	11.2	14.6
Town 1,000–19,999 inhab.	15.0	15.1	11.7	18.5	9.5	10.4	29.8	28.5	6.5	11.4	10.9	13.4
Country side	17.2	22.2	16.3	13.9	17.7	14.7	25.4	24.7	13.0	14.4	16.4	15.1

Note: ®Weighted according to population size in the five Nordic countries.

**Table 120: Proportion of smokers (%) among *adults* in the Nordic countries according to *urbanisation*. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region®
	2014 (n=1,990)	2014 (n=1,696)	2014 (n=1,776)	2014 (n=2,001)	2014 (n=1,041)	2014 (n=8,504)
The Capital and suburb	31.3	29.2	22.7	21.8	32.5	27.7
Large city > 50,000 inhab.	27.7	19.3	13.4	24.6	15.7	17.4
City 20,000–49,999 inhab.	21.4	22.6	12.9	20.4	26.7	19.7
Town 1,000–19,999 inhab.	22.9	26.4	15.4	31.2	16.1	19.7
Country side	29.3	26.3	13.9	15.0	20.7	20.0

Note: ®Weighted according to population size in the five Nordic countries.

**Table 121: Proportion of daily smokers (%) among *adults* in the Nordic countries according to *urbanisation*. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region®
	2014 (n=1,990)	2014 (n=1,696)	2014 (n=1,776)	2014 (n=2,001)	2014 (n=1,041)	2014 (n=8,504)
The Capital and suburb	22.7	17.7	14.3	13.9	13.9	17.2
Large city > 50,000 inhab.	22.6	12.9	8.1	19.1	19.1	11.7
City 20,000–49,999 inhab.	19.5	18.0	8.9	14.1	14.1	14.8
Town 1,000–19,999 inhab.	20.7	20.2	7.1	27.2	27.2	14.6
Country side	24.4	22.4	9.6	12.3	12.3	16.0

Note: ®Weighted according to population size in the five Nordic countries.

**Table 122: Proportion of binge drinkers last month (%) among *adults* in the Nordic countries according to *urbanisation*. NORMO 2014**

	Denmark	Finland	Sweden	Iceland	Norway	Nordic region <sup>@</sup>
	2014 (n=1,991)	2014 (n=1,650)	2014 (n=1,630)	2014 (n=1,975)	2014 (n=1,011)	2014 (n=8,257)
The Capital and suburb	47.0	53.5	42.6	44.5	56.9	48.6
Large city > 50,000 inhab.	54.0	46.6	46.9	31.8	51.1	48.5
City 20,000–49,999 inhab.	45.7	46.8	43.6	30.2	53.6	46.6
Town 1,000–19,999 inhab.	45.5	43.6	38.3	39.7	51.4	44.9
Country side	35.9	32.9	30.7	21.2	44.8	34.9

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

## Children

**Table 123: Proportion with an unhealthy diet (%) among *children* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=608)	2014 (n=581)	2011 (n=496)	2014 (n=465)	2011 (n=486)	2014 (n=485)	2011 (n=490)	2014 (n=491)	2011 (n=347)	2014 (n=332)	2011 (n=2,427)	2014 (n=2,354)
The Capital and suburb	14.3	20.2	18.2	16.9	12.1	24.1	12.1	11.9	6.3	7.0	13.3	19.1
Large city > 50,000 inhab.	4.7	15.7	21.5	7.3	23.2	12.5	11.2	22.9	8.7	11.1	17.5	11.9
City 20,000–49,999 inhab.	14.1	10.0	12.3	14.3	21.3	19.4	12.4	15.0	11.5	23.1	15.0	16.2
Town 1,000–19,999 inhab.	15.0	14.0	20.4	14.6	20.3	29.1	11.4	24.9	12.3	6.3	16.4	16.4
Country side	5.9	5.9	17.7	11.4	19.8	26.5	–	5.1	8.7	6.8	14.3	15.6

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 124: Proportion of inactive (%) among *children* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=606)	2014 (n=586)	2011 (n=494)	2014 (n=497)	2011 (n=488)	2014 (n=495)	2011 (n=492)	2014 (n=508)	2011 (n=351)	2014 (n=351)	2011 (n=2,431)	2014 (n=2,437)
The Capital and suburb	37.4	63.3	30.1	30.6	77.9	70.8	51.7	43.7	66.9	53.3	53.3	58.1
Large city > 50,000 inhab.	47.7	59.4	38.7	44.6	72.3	61.5	44.2	54.4	59.6	65.7	58.6	58.2
City 20,000–49,999 inhab.	61.1	60.9	52.0	40.7	70.6	66.8	40.4	49.2	53.2	51.9	59.3	55.0
Town 1,000–19,999 inhab.	60.9	54.6	36.9	41.3	62.6	78.1	62.6	51.2	76.7	63.3	63.5	62.1
Country side	59.3	70.3	43.3	46.2	74.5	67.8	–	67.7	73.6	58.4	63.5	60.8

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 125: Proportion with high recreational screen time (> 4h/d) (%) among *children* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=599)	2014 (n=578)	2011 (n=487)	2014 (n=487)	2011 (n=468)	2014 (n=489)	2011 (n=487)	2014 (n=506)	2011 (n=330)	2014 (n=334)	2011 (n=2,371)	2014 (n=2,394)
The Capital and suburb	15.1	20.3	14.0	20.3	9.2	12.2	10.1	4.7	17.8	10.4	13.2	14.2
Large city > 50,000 inhab.	12.9	24.4	15.9	18.2	11.0	14.1	9.9	5.9	20.4	12.8	14.3	16.5
City 20,000–49,999 inhab.	14.4	17.8	13.0	12.5	18.2	17.1	5.4	7.4	30.9	15.9	18.9	15.7
Town 1,000–19,999 inhab.	18.4	16.0	21.6	10.7	16.2	12.3	3.2	6.2	21.3	19.4	18.6	15.1
Country side	18.1	23.6	18.5	12.3	25.6	12.9	–	5.7	16.1	17.9	20.4	15.3

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 126: Prevalence of OW/OB (%) among *children* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=559)	2014 (n=522)	2011 (n=485)	2014 (n=467)	2011 (n=444)	2014 (n=467)	2011 (n=415)	2014 (n=398)	2011 (n=289)	2014 (n=296)	2011 (n=2,192)	2014 (n=2,150)
The Capital and suburb	3.2	19.4	10.2	15.8	18.2	13.9	14.4	16.4	25.6	12.4	13.6	14.9
Large city > 50,000 inhab.	13.1	10.1	18.3	10.3	9.0	24.1	22.5	20.4	9.6	8.3	12.1	16.2
City 20,000–49,999 inhab.	11.8	4.2	22.1	13.1	10.1	4.9	33.0	27.6	12.0	10.2	14.3	8.3
Town 1,000–19,999 inhab.	13.1	16.2	19.2	14.6	22.3	18.7	29.1	36.6	15.5	21.5	17.1	18.0
Country side	20.3	9.5	18.2	22.3	11.3	16.7	–	0.0	19.5	21.0	16.4	18.0

Note: <sup>@</sup>Weighted according to population size in the five Nordic countries.

**Table 127: Prevalence of OB (%) among *children* in the Nordic countries according to *urbanisation*. NORMO 2011 and 2014**

	Denmark		Finland		Sweden		Iceland		Norway		Nordic region <sup>@</sup>	
	2011 (n=559)	2014 (n=522)	2011 (n=485)	2014 (n=467)	2011 (n=444)	2014 (n=467)	2011 (n=415)	2014 (n=398)	2011 (n=289)	2014 (n=296)	2011 (n=2,192)	2014 (n=2,150)
The Capital and suburb	0.0	11.6	3.6	0.0	3.4	1.3	1.6	3.8	13.0	5.0	4.1	2.9
Large city > 50,000 inhab.	0.0	1.2	2.9	1.0	0.8	6.4	7.9	1.3	2.0	1.4	1.6	3.5
City 20,000–49,999 inhab.	1.7	1.3	4.1	0.4	0.0	1.5	4.2	3.1	7.9	0.0	3.4	0.9
Town 1,000–19,999 inhab.	1.4	6.1	4.1	9.7	2.8	2.4	12.3	6.6	1.0	6.0	2.0	5.4
Country side	7.7	3.3	4.3	2.7	2.2	3.1	–	0.0	5.1	1.7	4.2	2.7

Note:           <sup>@</sup>Weighted according to population size in the five Nordic countries.





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## The Nordic Monitoring System 2011–2014

This report describes the results of the first and second collection of data in the joint Nordic Monitoring System of diet, physical activity and overweight. It is well recognized that health in the European Region needs to be improved and Nordic public health researchers have since 2008 developed and validated a Nordic method to assess diet and physical activity among adults and children. Data has collected on health behaviour and overweight in 2011 and 2014 among 18,000 adults and 5,000 children. During the three year survey period, significant changes have occurred in the Nordic countries, especially among adults. The Nordic Monitoring System shows that lifestyle and weight status differ between the Nordic countries despite highly comparable societal structures. Favorable and unfavorable health behaviour is present in all countries and there are areas to be improved in all countries.

